

SONETT V4

OWNER'S MANUAL



CLASSIC CAR ARCHIVE

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SONETT V4

Owner's Manual



SAAB AKTIEBOLAG
LINKÖPING – TROLLHÄTTAN SWEDEN

SAAB U.S.A. INC.
100 Waterfront Street
NEW HAVEN, CONN. 06506
Telephone 203-469-2331

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Foreword

Dear Saab Owner,

It is a pleasure to present you with this instruction manual for your Sonett V4. We recommend you study this manual; it is an important accessory of the car. It shall be kept in the car when driving in order to be at hand when needed. The manual contains all the information you need about the car and its characteristics. Regarding the details given about the equipment of the car, we reserve the right to introduce modifications to later cars in the current series.

The Saab Sonett V4 is a product of the highest quality, built to satisfy exacting demands on durability, performance and driving characteristics.

But no matter how well designed and built a car is, it will not give its best performance unless it is driven and maintained properly. The car's roadworthiness and its working life will be impaired by neglected maintenance or by careless driving. Special servicing by experts is essential when the car is new. The first maintenance service is free of charge in accordance with the service book, which is sent to you soon after purchase. You should also refer to the service book for the servicing instructions to be followed.

It is most important that servicing described in this book is carried out correctly. It should therefore be done by an authorized SAAB garage. We know that the recommendations and instructions given in these pages will help you to get the best out of your car, and are confident that your Saab Sonett V4 will give you the service and pleasure you have a right to expect of it.

Yours truly,

SAAB AKTIEBOLAG

Trollhättan, November 1967

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Important

In accordance with the Federal regulations, all 1968 model cars must be equipped with an exhaust emission control device.

On your new Sonett V4, this is accomplished by using the SaFree exhaust emission control device which means:

1. Use of Free Wheel Drive
2. Modified carburetion

Notice:

In order to insure compliance with the law:

1. The Free Wheel Drive must always be used except for emergency push starting or when driving in extremely mountainous terrain.
2. The tuning of the engine should be carried out only at an authorized SAAB dealer.

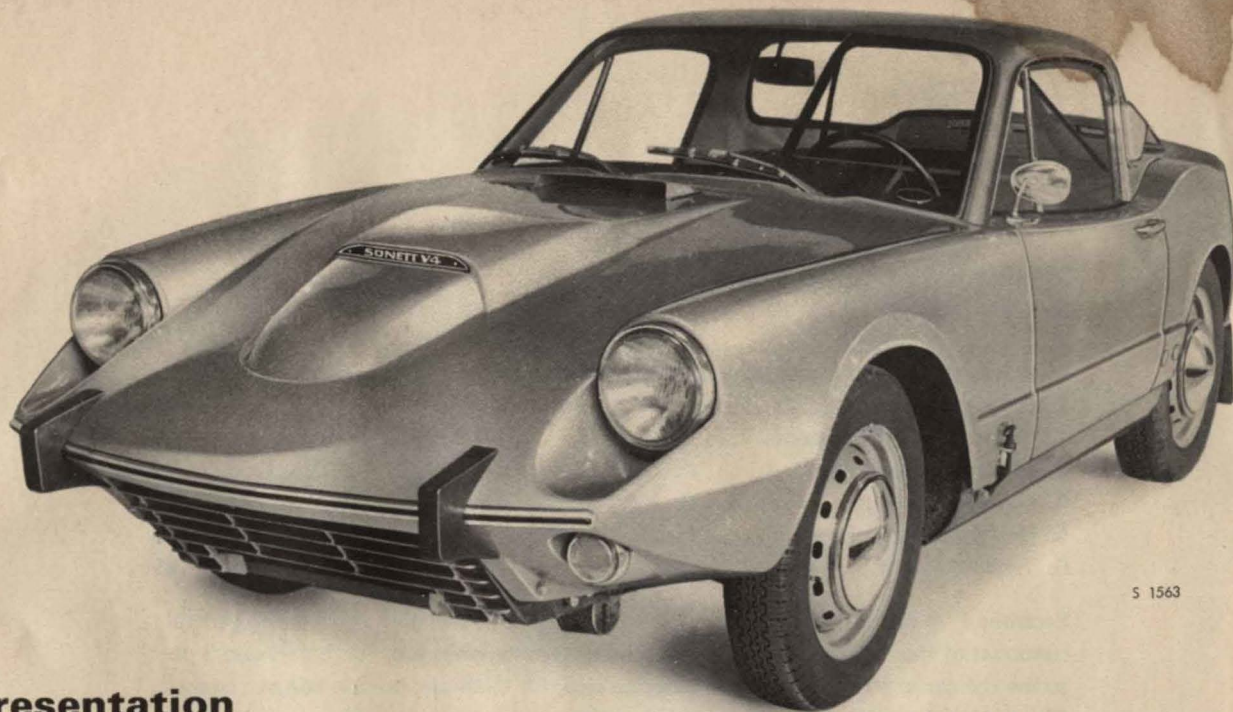
Please refer to page 17.

Contents

The Owner's Manual is divided into the following main sections:

1. Presentation	6
2. Controls and instruments	8
3. Driving instructions	15
4. Maintenance	20
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6. Technical data	58

Sections 1 - 4 should be studied first in that order. This will give you a quick general rundown of the car, its working parts, driving, maintenance etc. Sections 5 and 6 describe the car in greater detail and describe also, for example, how to adjust brakes and electrical system. For a detailed list of the contents, see page 62.



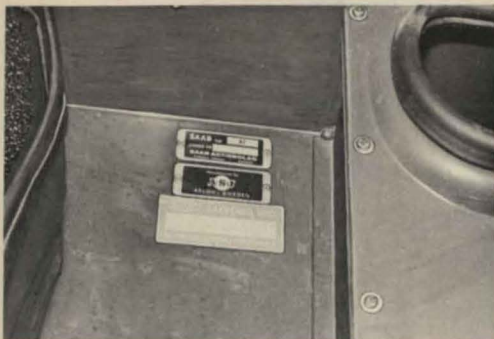
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Presentation

The Saab Sonett V4 is a two door, two seat sports coupé. The engine is a four-cylinder, water-cooled four-stroke engine with the cylinders grouped in a V-formation. The car has a four-speed gearbox and a two-circuit brake system with disc brakes at front and drum brakes at rear. The front wheel suspension is individual while the rear axle is rigid. Both at front and rear there are special coil-

springs and double-acting telescopic shock absorbers. The electrical system has a voltage of twelve volts and is equipped with an alternator. The body work is made of fiber glass and consists of two parts besides the doors and the trunk lid. The windshield pillars have steel reinforcements. The car is also equipped with a roll over bar.

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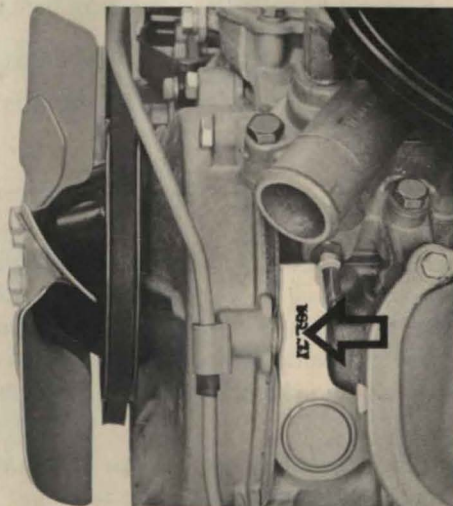


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Figure 1. Location of chassis number

The chassis number is also imprinted on the L.H. side of the plate in front of the radiator. (Always state chassis No. and type of car in enquiries etc.).

The plate above the chassis number plate shows the paint color code of the car.



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Figure 2. Location of engine number

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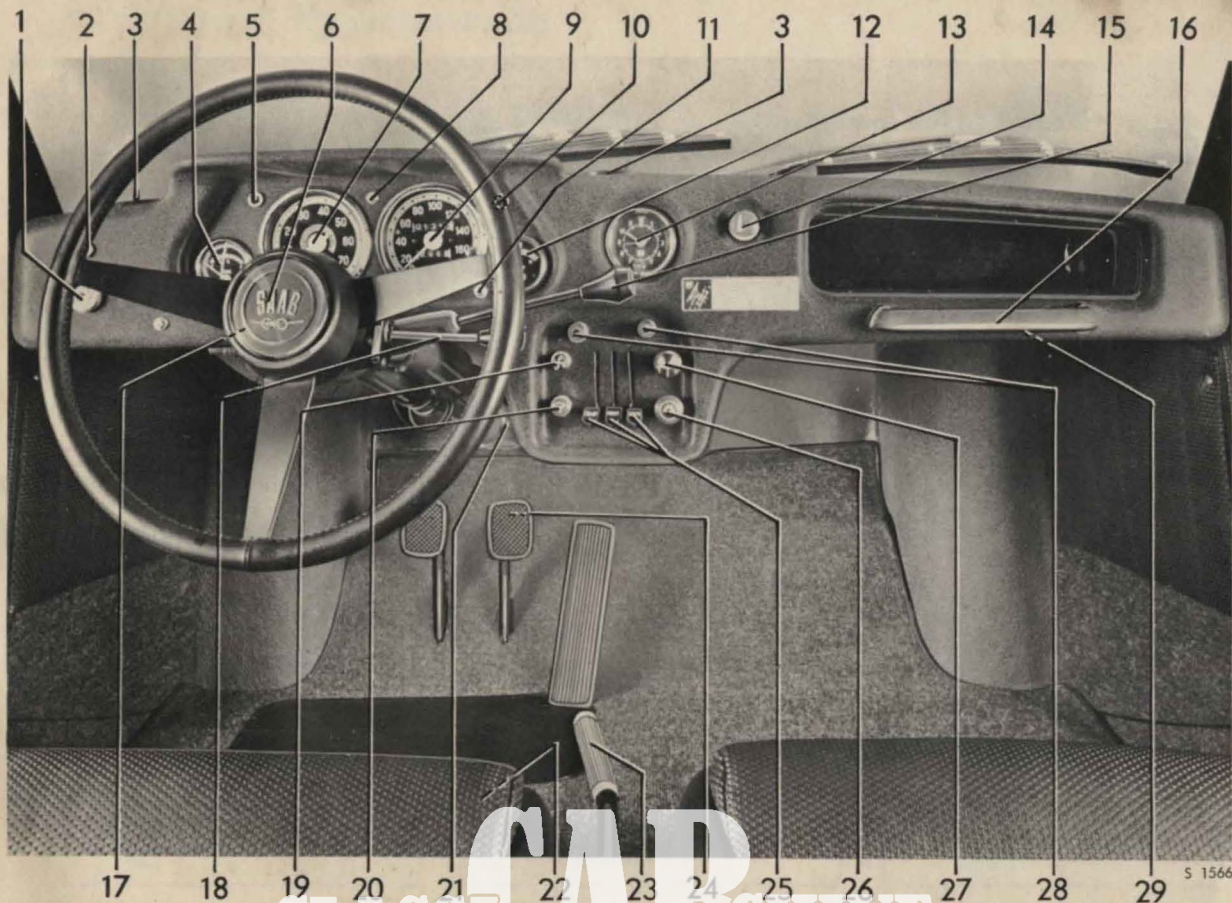


Figure 5. Instruments and controls

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Instruments, controls

1. Ignition lock, see page 8.
2. Charge indicator light. Glows orange when the alternator is not charging.
3. Defroster vents. Adjustable by turning.
4. Fuel gauge. The amount of fuel in the tank is shown when the ignition is on.
5. Indicator light, oil pressure.
6. Horn button.
7. Tachometer. The green zone shows the permissible number of revolutions. The tachometer is electric.
8. High beam indicator light. Shows a blue light when the headlights are on with the beam undimmed.
9. Speedometer with odometer and trip-meter. The speedometer is graduated in m.p.h. or km/h. The odometer shows the distance covered in miles (kilometers).
10. Direction indicator light. Flashes green in time with the indicators.
- 11.* Brake warning light will glow red as soon as the brake pedal travel becomes too large due to any of the following faults:
 - a) Leakage on one of the two brake system circuits.
 - b) Rear brakes need adjustment.If the warning light glows an authorized SAAB dealer should be consulted for investigation and necessary remedy.
12. Temperature gauge.
13. Electric clock with setting screw. The regulating screw is at the back of the clock.
14. Cigarette lighter.
15. Gear lever. For position, see Figure 12. When engaging the reverse gear, the back-up lights are automatically lighted.
16. Grab bar.
17. Fuel indicator light. Glows red when there is less than 2 US gals. (7 litres) left.
18. Direction indicator switch with headlight flasher and dimmer switch when moving the lever towards the wheel.
19. Heater fan switch with two speeds.
20. Switch for windshield wipers, 2 speeds, and windshield washer. To start the wipers, pull out the knob. The first position is for low speed, and the second position for high speed. The windshield washer works when the knob is pulled fully out.
21. Free Wheel Drive control. To lock out the Free Wheel Drive action, pull the handle right out. See page 17.
22. Seat adjustment, see page 13.
23. Handbrake.
24. Switch for brake warning light. See »Brakes», page 38.
25. Heater controls. For details of operation, see page 12.
26. Warning flasher switch.
27. Switch for headlights and instrument panel lights. When the knob is pulled out to the first stop, the side and rear lights as well as the number plate light are lighted. Pulling the knob all the way out lights the headlights also. The intensity of the instrument panel lights may be adjusted by turning the knob when the switch is in an »on» position.
28. Switch for extra equipment.
29. Map reading light.

* Will later be placed in the speedometer.

Ventilation and heating controls

The levers shown in Figure 6 are used to control the flow of warm or cool (outside) air to the interior of the car. The lever marked TEMP sets the thermostatically regulated water valve to heat the incoming air to the desired temperature. This temperature remains constant at the preselected level regardless of driving speed and whether the fan is working or not. Maximum heating effect is obtained when the lever is pushed all the way up. When the lever is all the way down, the heater is switched off.

The lever marked VENT controls the supply of air to the floor and sides. The air vents are open when the lever is up, closed when it is down.

The lever marked DEFR controls the supply of air to the inside of the windshield. Here, too, the up and down positions correspond to open and shut respectively.

The fan motor can be run at two speeds: full speed is obtained when the knob is pulled fully out, and half speed when the knob is in the first position.

Use the fan when driving at low speed

At speeds in excess of about 30 m.p.h. (50 km/h), a forced draft is generated which is normally sufficient to enable the air heater to function satisfactorily. Thus the fan need only be used when the car is stopped or moving at low speed. Adequate ventilation of the car's interior is provided by the vents at the rear (see Fig. 9) with the windows closed. Of course increased ventilation can be provided by opening the windows or the doors.

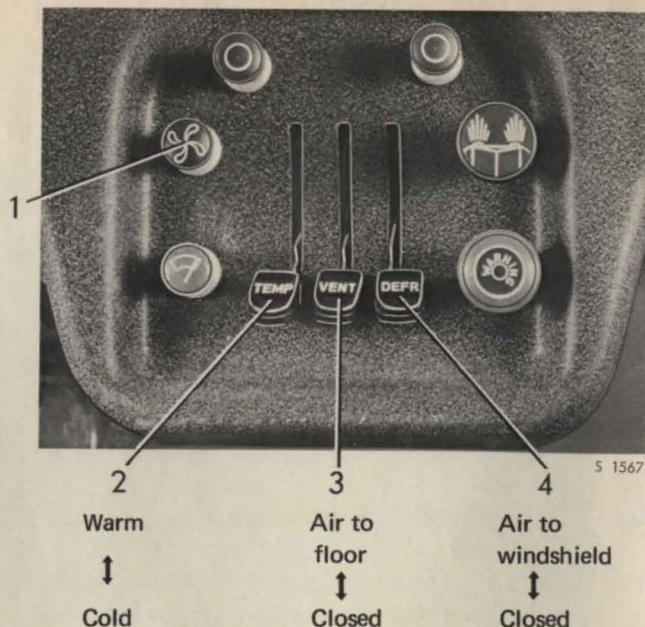


Figure 6. Heater controls
1. Heater fan switch
2. Heater control
3. Air control, floor
4. Air control, defroster

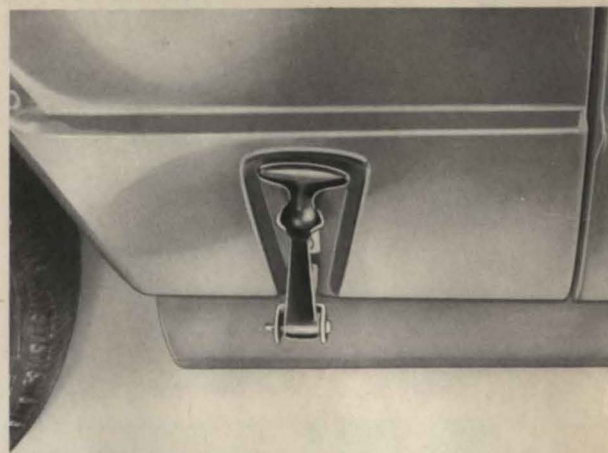


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Figure 7. Seat adjustment

Seat adjustment

When the catch is pressed down, the seat is released and can be moved forward or backward as desired.



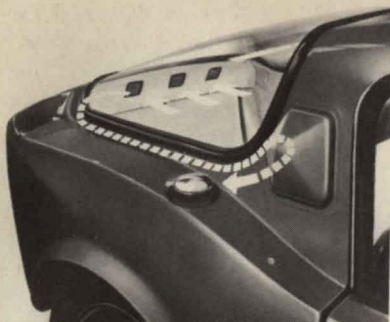
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Figure 8. Hood lock

Hood lock

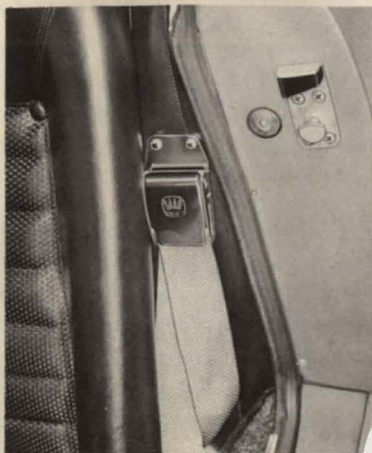
The engine hood is opened forwards towards the front of the car in the following manner:

- a) Pull off the handles (made of rubber) from the hood.
 - b) Lift up the hood by gripping it below a windshield wiper.
- When closing, make sure that the guide lugs of the hood fit into their positions.



S 1176

Figure 9. Vent channels



S 1548

Figure 10. Safety belt hook



S 1178

Figure 11. Safety belt

The belts for the seats are of the lap-and-shoulder type. The length of the belt should be kept adjusted tightly. Adjustment is made by means of the tensioning device on the hip part of the belt. When not in use, the belt is to be hooked on to the suspension device. See Figure 10.

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Driving Instructions

General

Every type of car has its own special characteristics and even cars of the same make and type may show considerable individual variations according to their mechanical condition. Wheel alignment, steering mechanism, brakes, tires, shock absorbers, etc., should therefore always be kept well trimmed and in good condition if the car is to perform in the manner intended by its design.

There are, however, a number of other significant factors which come into play here, such as load distribution, the state of the road, etc.

Starting the engine

Choke

To facilitate starting of cold engine, the carburetor is equipped with a cold start mechanism or choke. This device is automatic and is controlled by the temperature of the engine coolant. As soon as the suitable water temperature is reached, the cold starting device is put out of action and remains so even if the engine is stopped and cools off completely. To put the cold starting device into action again, the accelerator must be pressed down fully before the next start.

Starting with cold engine

1. Gear lever in neutral.
2. Depress the clutch pedal.

3. Press down the accelerator fully, and release it. This is necessary for putting the cold starting device into action.
4. Release the accelerator fully, then turn the ignition key to the starting position.
5. Release the ignition key, and let it spring back when the engine starts. If the engine starts normally but stops after a few seconds, the starting procedure shall be repeated from pos. 3. To prevent this stalling of engine, the accelerator pedal may be depressed quickly 2 or 3 times before pushing the accelerator pedal down fully once again as mentioned in paragraph 3 above.

Note!

In exceptionally cold weather, the starter motor should not be allowed to run for more than 5 - 10 seconds without a stop. Between each starting attempt, pause for 20 - 30 seconds in order to allow the battery to recover.

6. Release the clutch pedal.
7. Avoid gunning the engine or putting it under heavy load when cold. In any circumstances the greatest care must be taken as long as the oil pressure indicator light glows. Start driving as soon as the oil pressure indicator light has gone out, this is the quickest way to reach the right working temperature.
8. In exceptionally cold weather see to it that other accessories and lights are switched off during the starting moment.

In exceptionally cold weather make sure that oil of correct viscosity is used, further see your dealer about starting tips.

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Starting with warm engine

1. Gear lever in neutral.
2. Depress the clutch pedal.
3. Normally the accelerator should be in the released position. At higher out-door temperatures the accelerator should be depressed half way down and be kept in such position.
4. Turn ignition key to starting position.
5. Release the key and let it spring back as soon as the engine fires.
6. Release the clutch pedal.

Stopping the engine

1. Turn off the ignition.
2. Avoid gunning the engine before it is stopped as a later start is not positively affected, if the engine is gunned.
3. Avoid stopping the engine immediately after driving hard. It is suitable to allow the engine to idle a few seconds before stopping it, in this way too big differences in temperature are avoided.

Gear changing

When changing gear, engage the clutch gently and smoothly. There are only two correct positions for the clutch pedal when under way, either fully depressed (clutch disengaged) or fully released (clutch engaged). Make a practice of always taking your foot off the clutch pedal, when this is not being used. Driving with a slipping clutch or with the foot resting on the pedal is a bad habit and causes heavy wear on the

clutch plates and bearings. If the car is at a standstill, put the gear lever in neutral and release the clutch.

In the gear box all forward gears have synchromesh. To engage the reverse gear, pull the lever out from the steering column and then lift it towards the steering wheel pulling backward and downwards. The positions of the different gears are shown in Figure 12.

It is possible to shift down without using the clutch if the free wheel is in operation. We recommend to use the clutch when shifting up the gears. (i.e. shifting from 1st to 2nd and on to the fourth gear.) All gear changes should however be made with a smooth, precise touch and with a slight, barely perceptible pause in neutral.

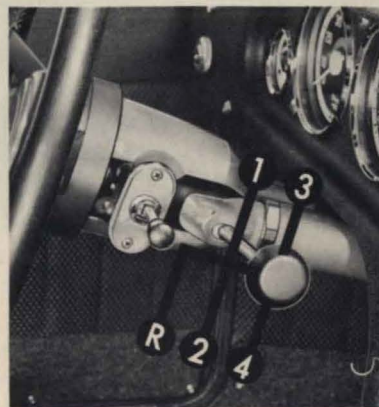


Figure 12. Gear positions
R = Reverse

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Note! To minimize exhaust emissions one should always shift below the following speeds:

1st to 2nd	17 m.p.h. (4,000 r.p.m.)
2nd to 3rd	30 m.p.h. (4,000 r.p.m.)
3rd to 4th	50 m.p.h. (4,000 r.p.m.)

Free Wheel Drive

The gear box is equipped with Free Wheel Drive on the input shaft. The Free Wheel Drive has a locking mechanism by means of which it can be cut out or »locked». This mechanism is operated from the driver's seat by means of a handle located above the brake pedal (see Figure 5).

Handle pushed in = Free Wheel Drive operating

Handle pulled out = Free Wheel Drive locked

Locking of the Free Wheel Drive must be carried out only with the car at a standstill.

The car should be driven with the Free Wheel Drive in operation at all times. The engine then has no braking effect when accelerator is released, and the car can maintain its speed for a while with the engine idling. This cuts down fuel consumption and engine wear. It also makes gear changing easier and makes for smoother, even running, using the Free Wheel Drive on level roads as well as downhill. The only times when the Free Wheel Drive

must be locked out are if it is necessary to start the engine by towing or for similar purposes, or it is desired to utilize the braking action of the engine when going down dangerous mountain grades in order to save from undue heavy wear on the ordinary brake system. It is recommended that the car be driven in Free Wheel Drive under all other conditions.

Brakes

On delivery the car is fitted with thoroughly tested brake linings and friction pads with very little tendency to fade, i.e. they tolerate high temperatures without any serious loss of effect. When changing brake linings and friction pads, therefore, check that the replacements fitted are original SAAB spare parts. See also under »Brake system», pages

No brakes, however, will stand up to excessively high temperatures. Therefore, when driving in extremely mountainous terrain, the Free Wheel Drive may be locked out of operation.

It is a good policy to check the functioning of the brakes now and then during driving to make sure the brakes really function properly. This is especially important and ought to be adhered to if the brakes are exposed to heavy over-flow of water or when driving in deep snow as the braking effect at mentioned extreme conditions may become reduced.

Steering characteristics

The Saab has a tendency to understeer, i.e. at a given wheel angle the turning radius tends to increase with rising speed. This feature is designed into the car to give it stability and cut down the risk of rear wheel skidding. However, should the rear wheels skid as a result of a violent manoeuvre, the understeer makes it very easy to check the skid. One of the ways in which understeer has been achieved is the weight distribution, which with driver and full fuel tank is 60% on the front wheels.

Running-in

Every new car requires a certain running-in period during which it should be driven with care. Pistons, cylinder bores and bearings need to be in operation for some time to produce smooth and hard-wearing surfaces. Placing too much strain on a new engine impedes this gradual bedding down process and is likely to shorten its working life. During the first 2,000 miles (3.000 km) the car must not be driven at full throttle, nor should the speed exceed 55 m.p.h. (90 km/h) except for very short periods. However, this does not mean that the engine should be allowed to labour — when going uphill, for example — before changing down. Always drive the car so that the engine turns over at a sufficiently high speed to prevent it seeming strained. **Avoid driving with full throttle for the first 2,000 miles (3.000 km).**

Driving on slippery roads

When the roads are slippery, icy or wet, it is most important to keep the car in perfect trim. In particular this applies to the brakes and tires of the car to ensure even braking effect on all four wheels. To maintain the road holding and steering characteristics of the car the tires should be equal as to the wear, make and pressure.

To stop a skid which may occur when driving the car on slippery roads, it is nowadays commonly accepted and preferred to use the principle of freewheeling. This means that to achieve highest possible maneuverability one must exercise the driving technique of letting all four wheels roll freely, i.e. no wheel should either drive the car forward or brake. Because the rear wheels of the Saab are not connected with the power unit of the car, the wheels always roll free as long as the brake pedal is not depressed. As for the front wheels, it is important to know that they also roll free as long as the freewheel is engaged and the accelerator released and as the Free Wheel Drive also is an essential part of the emission control device it must always be in operation.

Recommendations for driving on slippery roads:

1. When passing a road portion considered as being hazardous, let up on the accelerator!
2. If a rear skid occurs, turn the car in the same direction as the rear end is heading.
3. At front wheel skid avoid exaggerated wheel turns and by all means do not gun the engine.

All pedal movements and wheel manoeuvres should be executed with the utmost care and smoothness. Do not practice the technique of driving the car with the accelerator and brake pedal both depressed at the same time.

As the car must always be driven with the freewheel engaged it must be able to stop or slow down the speed of the car by using its regular brake system. But remember that no matter how slippery and icy the road surface may be, the use of the engine braking power cannot stop the car as efficiently as would a correct performed application of the regular brake system.

As soon as the winter season has started, practice in some open area away from traffic the techniques of braking and cornering the car on a slippery road surface.

Should a situation arise causing the car to skid it is more important than ever to know and thoroughly be familiar with the characteristics and behavior of the car.

Useful hints

1. Be sure that the ignition is switched off when the engine is not running; otherwise the ignition coil and breaker points are liable to be damaged.
2. Learn the quickest way to start the engine. If it turns over too long without firing, it will become flooded and even more difficult to start.
3. Drive in high gear whenever possible without straining the engine at low speed, and do not run the engine too

much when driving in 1st, 2nd or reverse gear.

4. Do not interfere with the carburetor settings. Any necessary adjustment or trimming must be done by an authorized Saab Dealer.
5. Keep the battery well charged at all times. A poorly charged battery may cause starting difficulties. Concerning battery connection, see »Alternator» and »Battery», pages 45 and 46.
6. In wintertime steps should be taken to prevent ice from forming in the cylinders of the door and trunk locks. Most service stations carry preparations suitable for this purpose. However, should a lock cylinder be frozen stuck, care must be taken not to break the key, melt the ice by warming the lock in some way.
7. The running temperature of the engine should be kept at about 185°F (85°C), i.e. with the needle in the green zone on the dial.
8. Snow chains of the type quick-links/snow links are to be avoided as it is great risk for the links to damage the disc brakes.
9. The engine must be kept in good tune. Major maintenance work should be carried out by an authorized SAAB dealer.
10. The brakes must always be maintained in good condition. Check that:
 - a) the play in the brake pedal is not larger than normal.
 - b) the brake pedal neither feels spongy nor sinks

under constant load.

- c) the braking power is good.
- d) the car does not pull to one side when braking.
- e) the brake warning light functions properly.

See also »Brake system«, page 38.

If any of these faults are detected, have the car inspected by an authorized SAAB dealer.

11. Driving with open trunk lid

It is not recommended to drive with the trunk lid open due to the fact that exhaust fumes can enter the passenger compartment by way of suction.

Therefore follow the directions given below:

- a) Keep all windows closed.
- b) Put fresh air and defroster ventilation controls in fully open position. Also switch on the fan to full speed.

Maintenance

Fuel

Premium fuel

Motor oil

Oil quantity 3,0 US quarts (3 litres), incl. oil filter 3.3 US quarts (3,3 litres).

Oil according to Ford specification ESE - M2C - 101 B, see Service Book.

Summer:	SAE 20 W 20	
	SAE 10 W 30	} Multigrade oils
	SAE 10 W 40	

Winter (below 14°F. -10°C):		
	SAE 10 W	
	SAE 10 W 30	} Multigrade oils
	SAE 10 W 40	

At extremely cold weather (i.e. a prolonged temperature of below -4°F (-20°C) oil with viscosity of SAE 5W 20 should be used. **Note!** SAE 5W 20 should not be used at temperatures above +32°F (0°C).

Check the oil level in the engine at regular intervals. The level of the oil must not be allowed to come below the lower mark on the oil dipstick but on the other hand the level must not rise above the upper mark of the oilstick as this can result in abnormal oil consumption. When necessary fill oil as recommended. The motor oil is changed the first

time after 1,000 miles (1.600 km). Next oil change at 6,000 miles (10.000 km), and then every 6,000 miles (10.000 km). Replace the oil filter cartridge every 6,000 miles (10.000 km).

Note! Do not confuse the drain plugs of the gear box and engine.

Fuel system

The fuel system has a filter at the pump. The filter is accessible when the pump cover with gasket has been removed. See Figure 25.

Cooling system

Inspect regularly to see that the cooling system is full of water. If water is to be added, make sure that it is absolutely clean. Never add too much cold water when the

engine is warm, as this may crack the cylinder block. In winter, permanent anti-freeze should be used. See table, page 35.

Brakes

For reasons of safety, always follow the instructions in the Service Book concerning the checking of the braking system and of the liquid level in the containers for the braking and clutch systems. **NOTE!** The brake fluid and cups, washers, seals and hoses should be changed every 36,000 miles (60.000 km), or at intervals not exceeding 3 years. Never drive with the handbrake on.

NOTE! At regular intervals, check the brake linings and friction pads for wear, and always keep the rear wheel

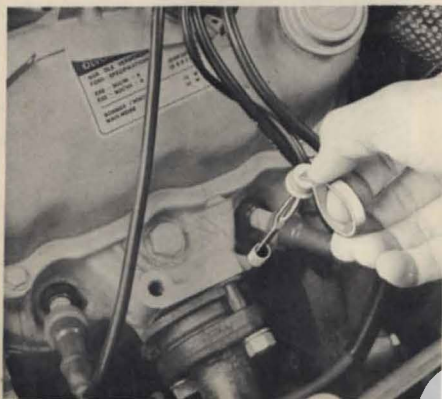


Figure 13. Check of oil level in engine.

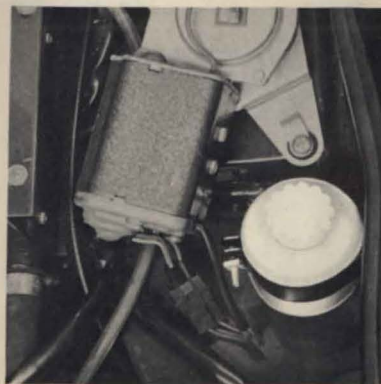


Figure 14. Container, brake system.

Use only recommended quality of brake fluid.

brakes well adjusted, i.e. the brakes should work without an excessive pedal travel. Otherwise, the advantages of the two-circuit system may be jeopardized. See also »Brake system», page 38.

Brake fluid

Even the best brake fluid deteriorates in the course of time, as a result of oxidation and absorption of water. Therefore when participating in contests and/or driving on mountain roads — remember to change the fluid, as soon as the car has run for more than a year. At normal driving change at 36,000 miles (60.000 km) or at intervals not exceeding 3 years. This work must be carried out by an authorized SAAB Dealer. When changing or topping up brake fluid make

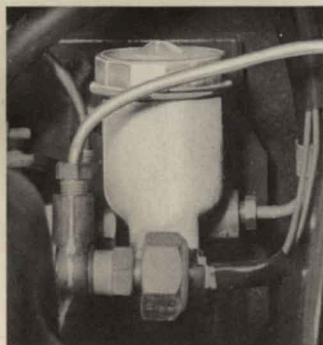


Figure 15. Container, clutch system.
Use only recommended quality of brake fluid.

sure that you get fresh genuine fluid of the prescribed quality.

Battery

Check the electrolyte level in the battery frequently and top up with distilled water as necessary. Battery terminals should be cleaned regularly and coated with vaseline to prevent corrosion.

Tire pressure

	Front	Rear
Inflation pressure	25 lbs./sq.in. (1.8 kp/cm ²)	22 lbs./sq.in. (1.6 kp/cm ²)



Figure 16. Container, windshield washer.
When filling water, turn the lid of the container a quarter of a turn counter-clockwise and lift it up.

Storage

If the car is to be laid up for a long period (during the winter, for example), it should be greased beforehand. In order to prevent rust and similar damage to the engine, the engine oil should be changed before the car is laid up. If required, the coolant should be drained off. In addition, the battery should be taken out and stored well-charged at room temperature.

Lubrication Instructions

General

Proper lubrication is essential to good maintenance and must not be neglected. The car should be greased every 3,000 miles (5,000 km) or at least twice a year. For this service SAAB Special chassis grease should be used and a careful check carried out to see that the rubber bellows and packings are free from defects. To ensure that this greasing is done properly it is included in the maintenance service detailed in the Service Book to be carried out regularly at intervals of 3,000 miles (5,000 km). This allows the maintenance service and the greasing to be done simultaneously by an authorized SAAB dealer so that the car is off the road for the shortest possible time. The engine oil should be changed every 6,000 miles (10,000 km) or twice a year. Also replace the oil filter cartridge at these changes. The engine oil should be changed the first time at 1,000 miles (1,600 km).

Check the oil level in the gearbox every 3,000 miles (5,000 km) by unscrewing the oil level plug 2 (see Figure 30). The

oil level beneath the opening should never be lower than about 1/4 in. (5 mm). Gearbox oil may be added as needed, but never mix two different kinds of oil in the gearbox. When the car has run 1,000 miles (1,600 km), the gearbox oil must be changed for the first time and the magnet plug cleaned. This should be repeated every 12,000 miles (20,000 km) or each spring and fall. Drive the car for 15 - 20 minutes before draining out the old oil. Fill with approx. 1.8 US quarts (1,7 litres) of oil until the oil runs out of the level plug opening. EP SAE 80 oil may be used in the gearbox throughout the year.

Door hinges may be oiled by applying an oil can to the holes in the rubber plugs, which can be seen when the doors are fully opened.

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Lubrication Chart, intervals 3,000 miles (5,000 km) or twice a year

Index	Lubrication points	Number	Lubricant	Instructions
1	Upper and lower ball joints, L and R	4	SAAB Special Chassis grease	Grease gun.
2	Steering gear and ball joints	3	SAAB Special Chassis grease	Grease gun. Steering wheel turned fully to the left.
3	Accelerator	4	SAE 40 oil	Oil can.
4	Hydraulic brake system	4	Brake fluid SAE 70 R 3	Check, intervals of max. 3 months.*
5	Hydraulically operated clutch	1	Brake fluid SAE 70 R 3	Check, intervals of max. 3 months.*
6	Pedals	3	SAE 40 oil	Oil can.
7	Handbrake links	3	SAE 40 oil	Oil can.
8	Locks	3	SAE 40 oil	Oil can.
9	Door stops	2	Vaseline	Grease.
10	Breaker cam	1	Bosch Ft 1v4	Grease.
11	Distributor lubr. felt under rotor	1	Motor oil	Oil.
12	Gearbox	1	EP oil SAE 80 (1,8 US quarts = 1,7 litres)	Check every 3,000 miles (5,000 km), change every 12,000 miles (20,000 km) or each spring and fall.
13	Front wheel bearings	2	SAAB Special Chassis grease	Re-pack at 30,000 miles
14	Rear wheel bearings	2	SAAB Special Chassis grease	Re-pack at 36,000 miles
15	Drive shaft, outer joint, L and R	2	SAAB Special Chassis grease	Re-pack at 30,000 miles
16	Drive shaft inner joint, L and R	2	SAAB Special Chassis grease	Re-pack at 30,000 miles
17	Engine	1	Follow instructions on page 20.	Oil change Replace oil filter cartridge. Note! Use original filter cartridge only.

* The brake fluid should be changed every 36,000 miles (60,000 km), or at intervals not exceeding 3 years.

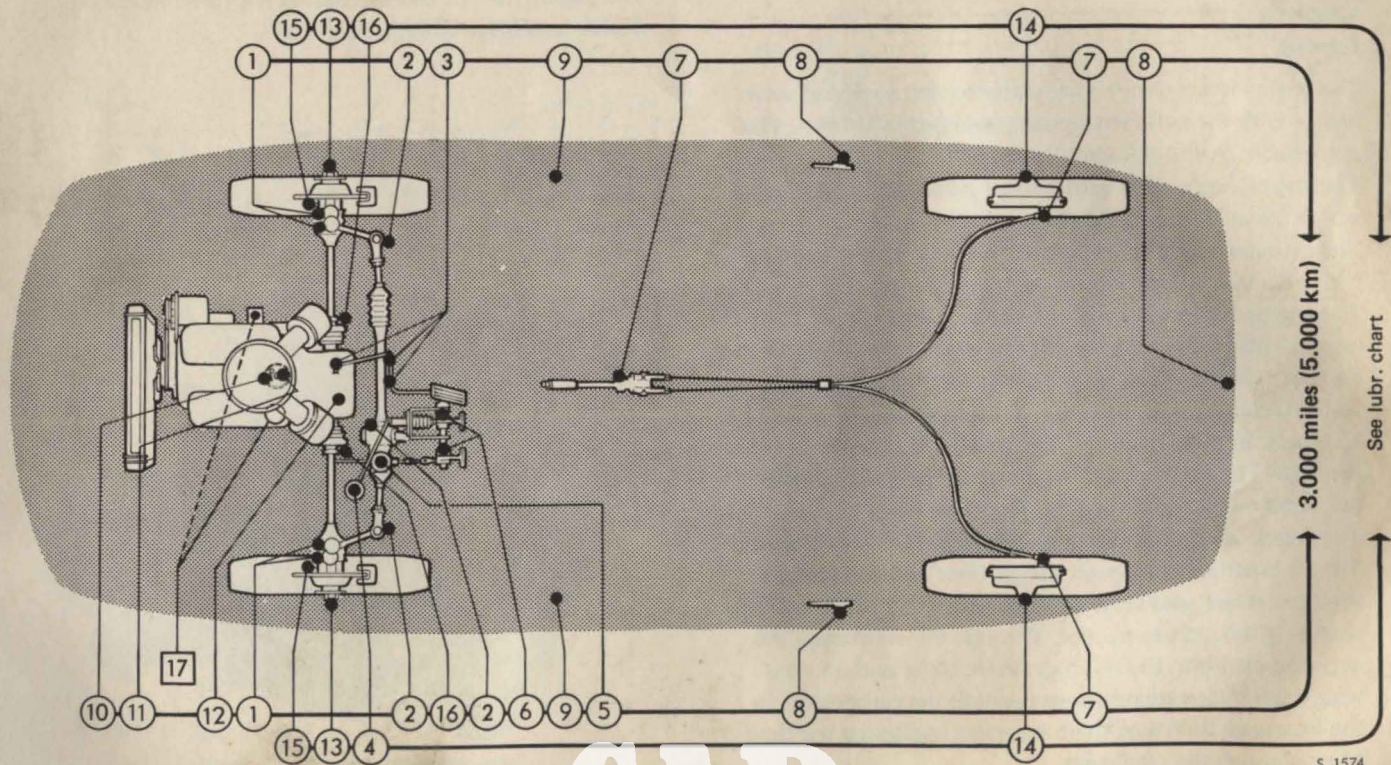


Figure 17. Lubrication points
 Numbers refer to the Lubrication Chart.

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Description and care

Engine

General

The engine is a four-cylinder, water-cooled overhead valve engine with the cylinders in pairs arranged in V-form. The angle between the cylinder pairs is 60°.

The engine is provided with a single downdraft carburetor, which has an automatic choke device.

The cylinder heads have separate inlet ducts, while the exhaust ducts are common for each cylinder head.

The engine is provided with a balance shaft in order to obtain balance. The balance shaft is placed in the block on the right side and is driven by the crankshaft with the same number of revolutions as the latter. The crankshaft runs, like the camshaft, in three bearings. The balance shaft runs in two bearings. The engine is bolted direct to the gearbox/differential, which together constitute the power unit.

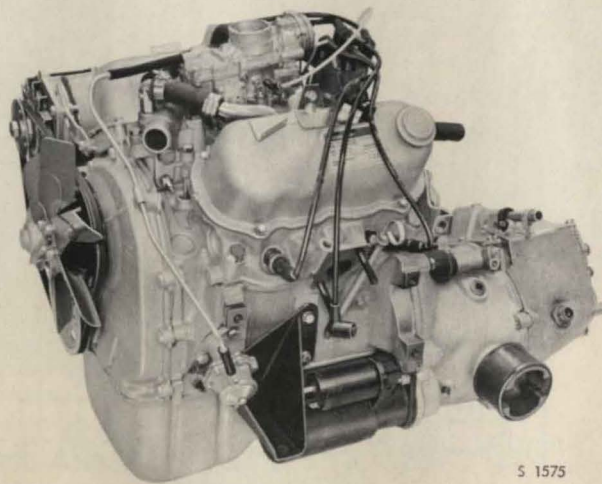
The engine is equipped with closed crankcase ventilation. The air is admitted through the air filter, where it passes the filter insert, and via a flame guard and a hose is led into the right-hand valve cover. Through the crankcase, the air is then led into the left-hand valve cover and on via a hose to an intermediate flange beneath the carburetor. In the intermediate flange there is a valve regulating the flow of air through the crankcase.

Exhaust emission control is obtained by:

1. Modified carburetion.

2. Use of Free Wheel Drive

The engine has not been equipped with any additional device to achieve emission control.



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Figure 18. Power unit

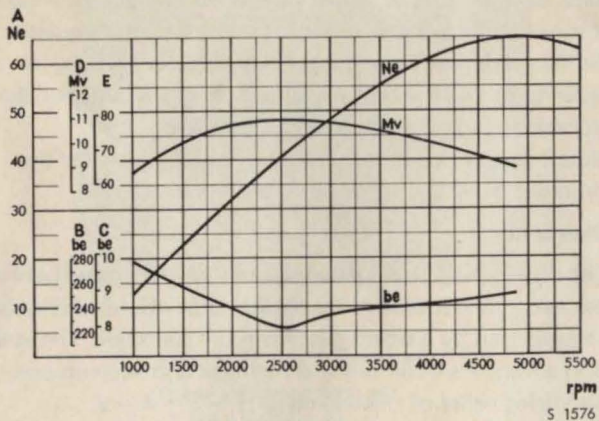


Figure 19. Performance curves

A = Power hp
 B = g/hph
 C = lb/hph
 D = Torque kpm
 E = Torque ft/lbs.
 Ne = Power, DIN
 Mv = Torque
 be = Fuel consumption per hph

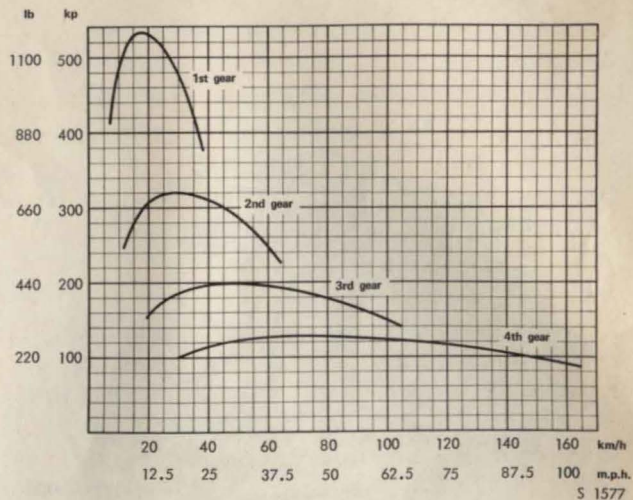


Figure 20. Traction curves

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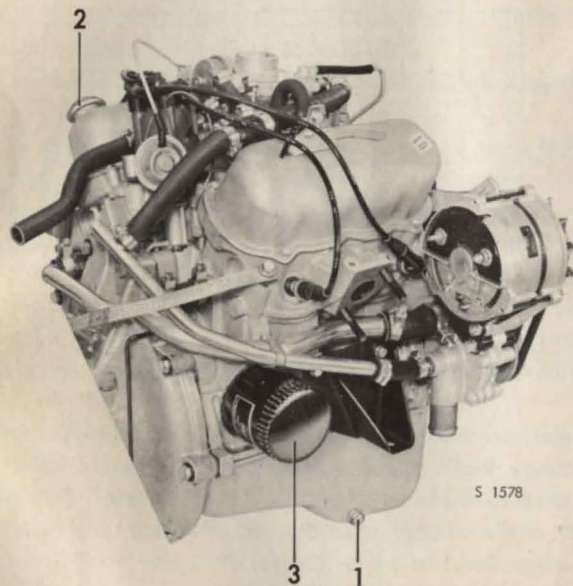


Figure 21.

Draining plug and filling cover, engine

1. Draining plug
2. Filling cover
3. Oil filter

Spark plugs

With the wire gauge, check that the spark gap is 0.024 — 0.028 in. (0.6 — 0.7 mm). If adjustment is required, it must be made on the side electrode of the plug, because if the central electrode is bent it may crack the insulator. As the spark plugs have been carefully selected it is, in order to obtain the best performance, important that the recommendations on page 60 be followed.

Note! Be very careful that impurities do not enter the cylinders when the spark plugs are being removed.

Distributor

The distributor is situated at the rear of the engine between the two cylinder blocks. Its breaker arm rotates clockwise and is driven by a worm gear from the camshaft. The ignition advance is a combined centrifugal and vacuum one. The firing order of the engine is: 1 — 3 — 4 — 2. Concerning placement of ignition cables, see Figure 23.

Important

All high tension insulators must be kept clean and dry. When necessary clean: ignition coil bakelit cap, distributor cap (inside and outside), ignition cables and spark plug insulators.

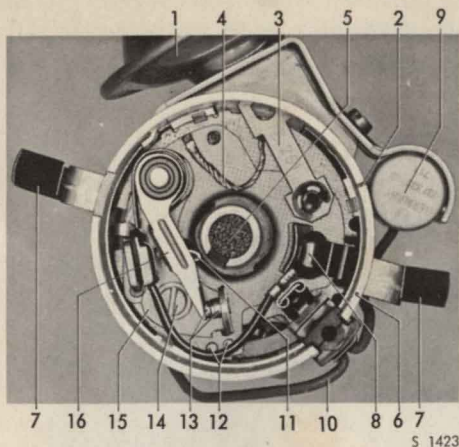


Figure 22. Distributor

Rotor and cover removed

1. Vacuum chamber
2. Adjustment mark
3. Adjustment rod
4. Ground lead
5. Lubrication felt
6. Assembly mark
7. Retaining spring
8. Bearing
9. Capacitor
10. Primary cable
11. Fiber peg
12. Adjuster for fixed breaker point
13. Breaker points
14. Lock screw
15. Fixed breaker point
16. Movable breaker point

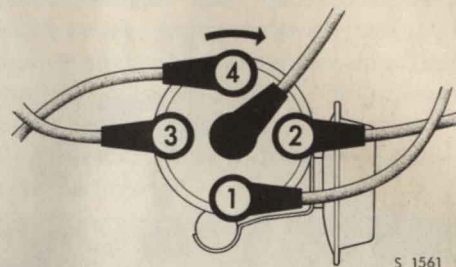


Figure 23. Placement of ignition cables

Ignition adjustment

Contacts and contact gaps should be checked every 6,000 miles (10,000 km). Be sure that the contact surfaces are clean and not so burned that they must be replaced. The contact gap should be 0.016 in. (0,4 mm) and should be checked with a feeler gauge when one of the cams is lifting the breaker contact to its outermost position.

Any adjustment of the timing will affect the exhaust emission and must only be carried out by an authorized SAAB dealer as special test equipment is necessary.

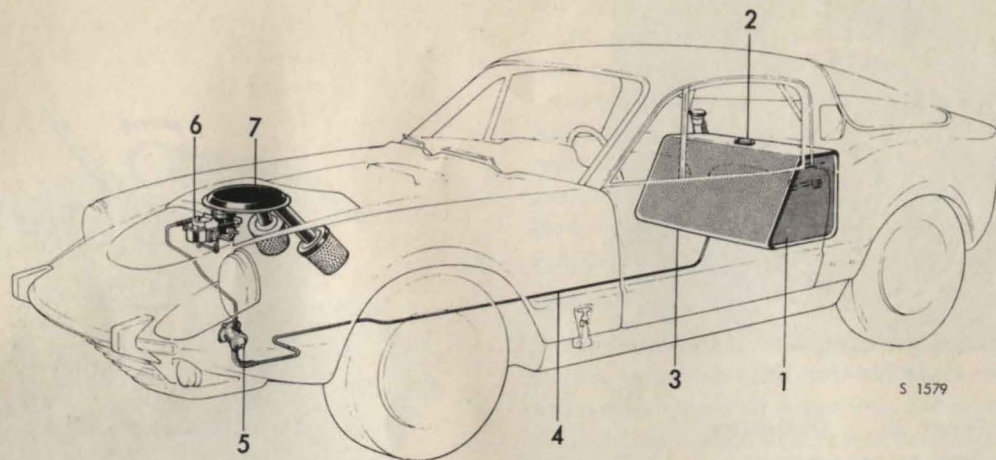


Figure 24. Fuel system

- | | |
|--------------------|---------------|
| 1. Fuel tank | 5. Fuel pump |
| 2. Fuel tank gauge | 6. Carburetor |
| 3. Draining plug | 7. Air filter |
| 4. Fuel pipe | |

Fuel system

The fuel system of the car consists of tank, fuel pipe, pump and carburetor with air filter.

The fuel tank is situated behind the partition between the passenger compartment and the luggage compartment. On the upper side of the tank, the electric transmitter for the fuel gauge is situated.

Fuel pump

The fuel pump is of the membrane type and is mounted on the left side of the engine. The pump is driven by the camshaft by means of a push rod, and in this way fuel is pumped to the carburetor. The fuel pump is provided with a filter which can be taken out for cleaning after removing the lid of the pump. The filter should be cleaned

every 12,000 miles (20,000 km), or whenever impurities in the fuel are suspected. When reassembling the pump, make sure that the gasket between the top and the filter is in position.

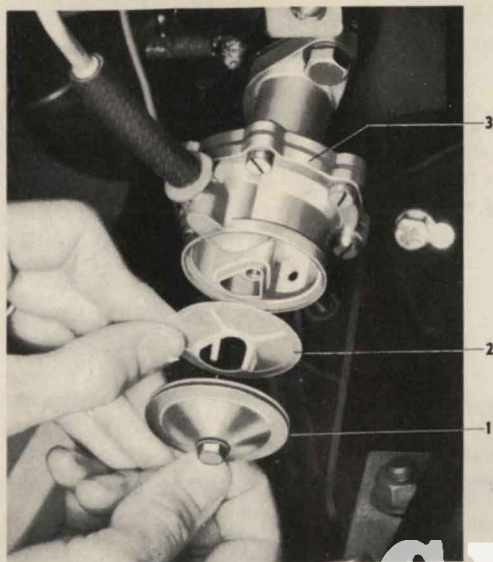


Figure 25. Fuel pump
1. Lid with gasket. 2. Filter. 3. Pump body.

Air filter

The air to the carburetor is cleaned through filters. The filter cartridges are replaceable and should be replaced every 18,000 miles (30.000 km) however, at least every year. When driving on dusty roads replace the cartridges at shorter intervals. At replacement loosen the wing nut. The filter cartridges should be protected against dampness and must not be washed or oiled. The air filter is also functioning as suction silencer.

NOTE! Protect the filter cartridges when washing the engine compartment.

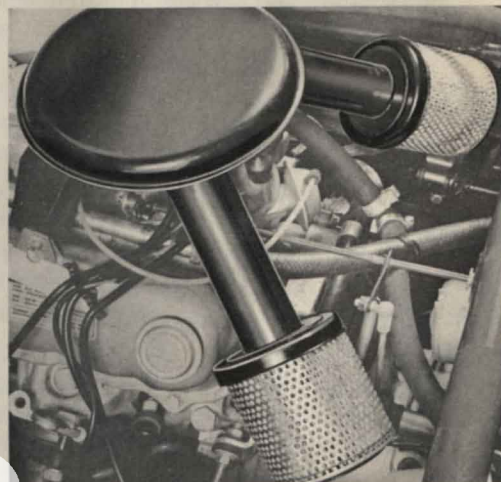


Figure 26. Air filter

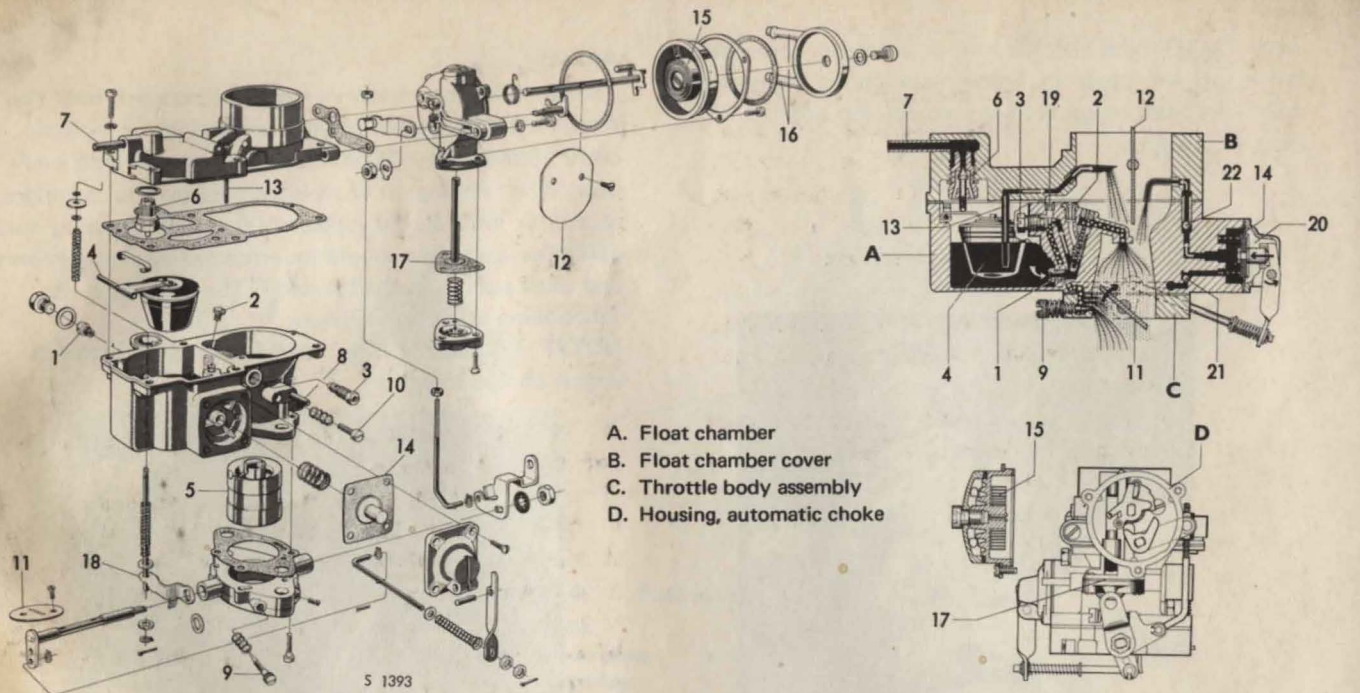


Figure 27. Carburetor Solex

1. Main jet
2. Emulsion jet
3. Idling jet, fuel
4. Float
5. Choke tube
6. Float valve
7. Connection, fuel hose
8. Connection, vacuum hose distributor

9. Air-regulating screw, idling mixture
10. Adjusting screw, idling
11. Throttle flap
12. Choke flap
13. Ascending pipe, additional system (jetonostat)
14. Diaphragm, acceleration pump
15. Bimetal spring, automatic choke

16. Water connections
17. Diaphragm for vacuum control of automatic choke
18. Regulating device, float chamber ventilation
19. Idling jet, air (drilled)
20. Acceleration pump
21. Inlet valve, acceleration pump
22. Outlet valve, acceleration pump

Carburetor

The engine is provided with a down-draft carburetor make Solex 32 PDSIT-4. Its appearance is seen in the picture below. The fuel feeding is regulated by unadjustable jets mounted in the carburetor body. In the carburetor body there are drilled the fuel ducts, and also airducts, and in the emulsion tube is already a certain volume of air mixed in the fuel.

The carburetor has an automatic choke device with quick-idling, acceleration pump and a pressure regulated enriching system called econostat.

To get best fuel economy and best possible performance, the carburetor jet combination is the following:

Choke tube	25.5
Main jet	122.5
Emulsion jet	100
Idling jet, fuel	50
Idling jet, air	1.5
Acceleration jet	50

Carburetor adjustments, if any, should be restricted to cleaning of jets and float chamber, and besides, idling adjustment.

Carburetor adjustments must be carried out in accordance with the manufacturer's recommendations. Incorrect carburetor adjustments may cause abnormal fuel consumption and will affect exhaust emission.

Idling adjustment

Any adjustment of the engine idling will affect the exhaust emission and must only be carried out by an authorized SAAB dealer as special test equipment is necessary.

Cooling and heating system

General

The capacity of the cooling system incl. the fresh-air heating element is 1.9 US gal. (7,2 litres). The radiator is situated in front of the engine and communicates with an expansion tank located behind the engine. The expansion tank has a pressure cap.

Until the engine reaches the proper working temperature, the radiator inlet is closed by a thermostat and the coolant circulates through the engine and the fresh-air heater until it has reached a temperature of approx. 181°F (83°C), when the thermostat begins to open.

NOTE! When draining off the coolant, proceed as follows:

1. Remove the pressure cap.
2. The coolant is first drained off through the drain valve under the radiator. If the system is to be drained completely, loosen the two hexagon plugs, one on each side of the lower part of the cylinder block, see Figure 28.
3. The heat control on the instrument panel should point to warm, see Figure 6 otherwise the system cannot be fully drained.

NOTE: When refilling coolant, the bleeder nipple on the

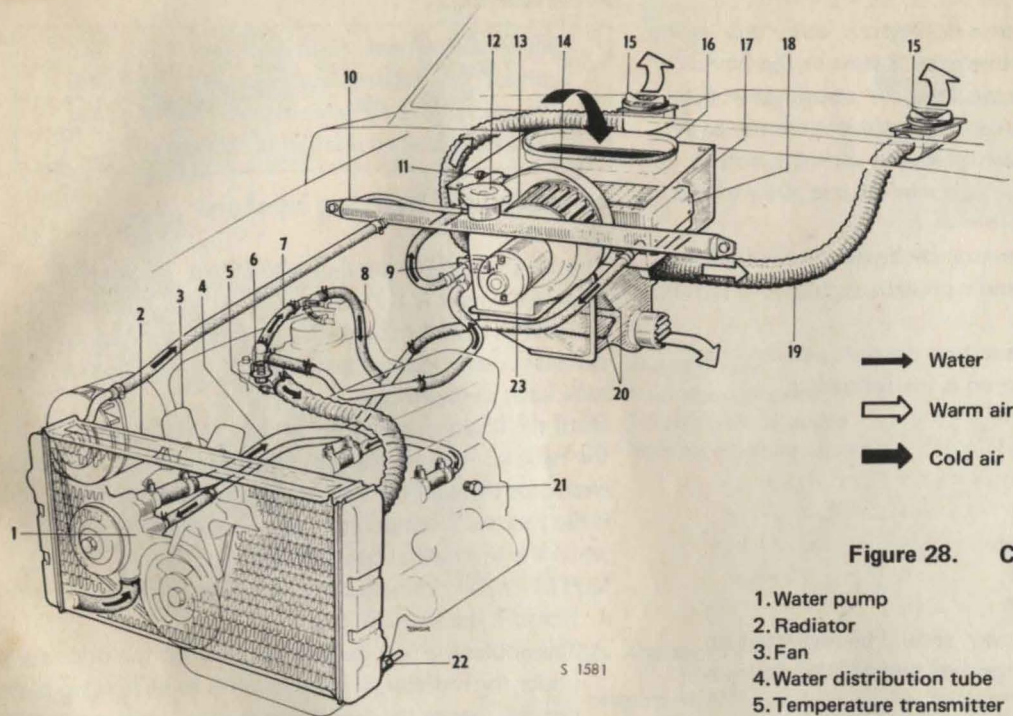


Figure 28. Cooling system

- | | |
|----------------------------------|-------------------------------|
| 1. Water pump | 12. Filling cap |
| 2. Radiator | 13. Fan wheel |
| 3. Fan | 14. Fan housing |
| 4. Water distribution tube | 15. Defroster jet, adjustable |
| 5. Temperature transmitter | 16. Fresh-air intake |
| 6. Thermostat | 17. Collector box |
| 7. By-pass | 18. Heat exchanger |
| 8. Water jacket, automatic choke | 19. Defroster hose |
| 9. Thermostat valve | 20. Air distributor |
| 10. Expansion tank | 21. Drain plugs (2) |
| 11. Bleeding nipple | 22. Drain valve |
| | 23. Heater fan motor |

heater element and the bleeder nipple at the thermostat housing must be open in order to fill the system completely. The greatest care must be exercised when removing the pressure cap if the coolant is boiling. Loosen the cap carefully and release any steam before taking the cap off completely. When the radiator has been filled up with new coolant, start the engine and run it for approx. 20 seconds at a moderate speed, until coolant escapes through the opened bleeder screw of the heat exchanger. Fill with coolant, as required. Only clean coolant is permissible. Never fill the radiator with cold water if the engine is hot, or the cylinder block may crack.

Cleaning the cooling system

The coolant should be changed twice a year, in the spring and in the fall, and the cooling system itself should be flushed out. At the same time check all the hoses and hose connections replacing defective parts where necessary. Should deposits have formed which cannot be removed by flushing, the cooling system should be cleaned by a service garage with special equipment for the purpose.

Repairing the radiator

If the radiator leaks, it should be repaired by soldering, and only in case of necessity by adding commercial sealers to the radiator water. The sealers tend to clog the radiator casings and lines and cause boiling.

Anti-freeze solutions

During cold weather when the temperature falls below the freezing point of water, an anti-freeze must be added to the water in the radiator; pure water would freeze and expand, cracking the radiator and cylinder block. Ethylene glycol is recommended as an additive. Methylated spirit is not very suitable because of its low boiling point, especially with the high radiator temperatures needed for good heater operation in cold weather.

Ethylene glycol, on the other hand, has a boiling point above that of water; therefore, only water need be added when replenishing the system. A disadvantage with glycol is that, like methylated spirit, it must be handled with care or it may spoil the paintwork of the car. It also reduces the heat dissipation power of the water. Experience has shown that too »lean« glycol mixtures (10–20%) may be unfavorable from the point of view of rust protecting. Consequently, it is recommended that glycol portion should be 50%. See mixing table. For the same reason, antifreeze should not be used in summer, and it should be replaced once a year.

Ethylene Glycol (US quarts)	Volume % approx.	Freezing Point		Boiling Point		Specific Gravity
		°F	°C	°F	°C	
1	13	21	– 6	214	101	1,017
2	27	5	–15	216	102	1,037
3	40	–15	–26	219	104	1,055
4	53	–46	–43	225	107	1,071

Clutch

General

The clutch is operated by a hydraulic system which consists of a hydraulic cylinder connected to the clutch pedal, as well as servo-cylinder which operates the clutch.

The main cylinder is equipped with a container which must be kept filled with brake fluid up to the level mark on the outside of the container.

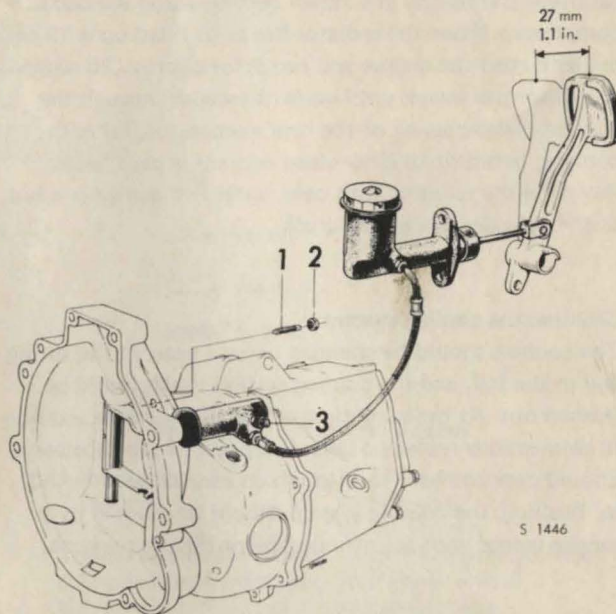
The clutch pedal should have a play of approx. 1.1 in. (27 mm). This is adjusted with the adjusting screw (Figure 29). By turning this screw to the right, the play is reduced. Do not forget to tighten the locking nut 2.

Bleeding the Clutch System

If the clutch does not disengage, in spite of correct clutch-pedal play, this may be due to air in the hydraulic system. In such a case, bleed the system in the following way:

1. Check that the container is filled with brake fluid.
2. Connect a suitable hose to the servo-cylinder bleeder screw, 3, Figure 29 and immerse the other end of the hose in the brake fluid container of the master cylinder.
3. Press down the clutch pedal and open the bleeder screw. Immediately before the pedal reaches its lowest position, close the bleeder screw. Repeat the above procedure until the brake fluid coming out of the system is free from air.
4. Refill the container with clean brake fluid up to the

level mark and check that the bleeder screw is properly tightened.



S 1446

Figure 29. Clutch pedal with adjustment mechanism

1. Adjusting screw
2. Lock nut
3. Bleeder screw

Transmission

The transmission is contained in a box with three compartments. The rear section containing shafts, cogwheel and gear shift bar is the actual gearbox. The mid section contains the Free Wheel Drive and the conical gear of the differential, from which the driving shafts lead. The front section, which terminates at the engine, contains the release bearing as well as the flywheel and clutch. The clutch is of the simple dry plate type with a spring hub. The car is equipped with a four speed gearbox. All gear have helical cogwheels in constant mesh and are coupled to their respective shafts by means of toothed couplings. The rear gearwheel is a sliding pinion. All gears are synchronized. Between the gearbox and the clutch is a free wheel which can be operated from the driver's seat by a handle. For advice on the operation of the free wheel and gear changing see Driving Instructions pages 16 and 17.

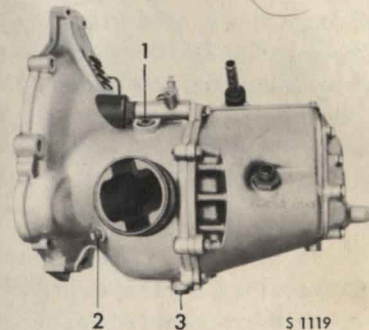
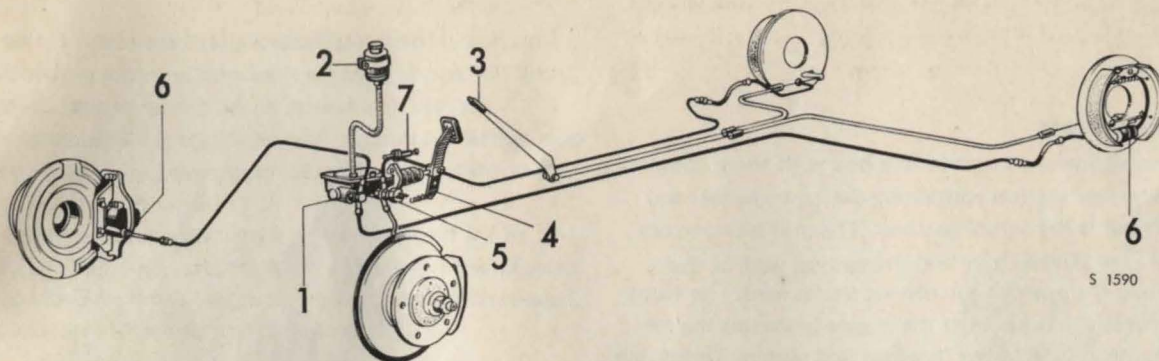


Figure 30.
Transmission plugs

1. Filler plug
2. Level plug
3. Magnetic plug,
oil draining



S 1590

Figure 31.

1. Master cylinder
2. Brake fluid container
3. Handbrake lever

Brake system

4. Brake pedal
5. Stop light switch
6. Brake cylinders
7. Brake warning contact

Brake system

General

The Saab has disc brakes at front and drum brakes at rear. The foot brake is hydraulic and acts on all four wheels. The brake fluid container is an integral part of the master cylinder.

The brake system is of the so-called two-circuit type, which means that the master cylinder controls the left front and right rear wheels simultaneously with, but independently of, the right front and left rear wheel. Consequently, should

a leak occur as a result of damage to the brake system, the braking effect will be lost only on one diagonal pair of wheels but will remain on the other diagonal pair. Leakage will become apparent partly through a long pedal travel and partly through a tendency for the car, when braked, to pull somewhat to the side where there is still braking action on the front wheel.

Mentioned faults in the brake system and neglected adjustments of the rear brakes are indicated by the brake warning

light, located in the speedometer. Reason for indication, the light glowing red, shall immediately be investigated and any malfunction in the brake system should be repaired by an authorized SAAB dealer.

The brake warning contact is placed on a bracket above the brake pedal. A control of the brake warning light function ought to be performed at regular intervals. Such control is executed by depressing the moving piece of the brake warning contact until the light glows red after which operation the moving piece is brought back to its initial and normal position.

The disc brakes are self-adjusting, but the rear-wheel brakes must be adjusted by hand, see below.

NOTE! Because the front-wheel brakes are self-adjusting, there is a risk that worn friction pads may escape notice. It is therefore essential that the instructions for brake maintenance given in the Service Book be followed. Keep the rear-wheel brakes well adjusted at all times, as the advantage of the two-circuit system may otherwise be lost. The mechanical handbrake acts on the rear wheels. The brake lever is located between the two front seats, and the action of the lever is transmitted to the rear wheels by two sealed Bowden cables.

Replenishing the brake fluid

Check that the brake fluid container is filled. Do not use inferior brake fluids, as these may ruin the rubber seals and endanger the functioning of the brake system. Even the best brake fluid deteriorates after long service due to oxidation and absorption of water. The brake fluid should therefore be changed after 36,000 miles (60,000 km), or at intervals of not longer than three years. When driving in contests, change every year. This shall be done by an authorized garage. When changing or filling brake fluid, make sure that fresh fluid of the prescribed quality is used.

* Brake adjustment, general

Wear on the friction pads of the front wheels is automatically compensated by the brake pistons, which gradually move further out. Thus, when the friction pads are worn down, this cannot be detected by abnormal pedal travel. The play of the pedal is, however, dependent on the degree of the wear of the rear brake linings. Keep the rear brakes properly adjusted at all times. This is important in order to ensure proper functioning of the two-circuit brake system. To a high degree neglected adjustment of the rear brakes can be the reason why the brake warning light starts glowing. **It is also most important that the thickness of the pads of the front brakes and the linings of the rear**

* To be carried out only by an authorized SAAB dealer.

brakes should be checked regularly in accordance with the instructions given in the Service Book. Pads and linings can be inspected after removal of the wheels. The rear brake drum is provided with a special inspection hole, see Figure 32. The minimum permissible thickness of disc friction pad linings is 0.06 in. (1,5 mm) and of rear brake linings 0.1 in. (2,5 mm).

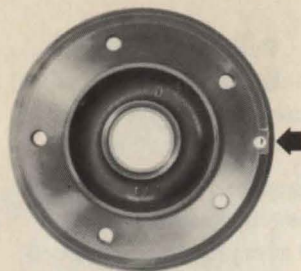
When friction pads or brake linings are exchanged, this should be done on both front or rear wheels at the same time and **never** on one wheel only — this is to ensure uniform braking effect. Make sure when exchanging that SAAB original spare parts are fitted. SAAB also uses the exchange system for brake shoes with linings.

If SAAB replacement exchange unit brake shoes are not available, use alternatively only SAAB original/genuine brake linings or SAAB recommended brake linings.

NOTE! The brake linings must, after they are riveted onto the brake shoes, absolutely and unconditionally be centerless ground in accordance with directives given in the Saab Service Manual.

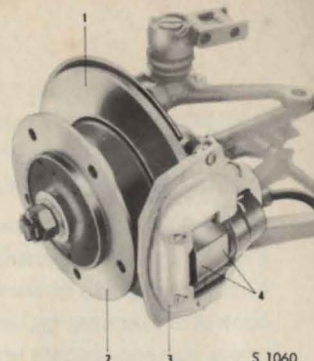
Footbrake adjustment

1. Raise the rear of the car until the wheels are clear of the ground.
2. The adjusting screw for the rear brake consists of a square pin located inside the backplate (2, Figure 34). Tighten the pin with the special ring spanner provided in the tool kit until the wheel locks, then back off one or more notches, center the brake shoes by depressing



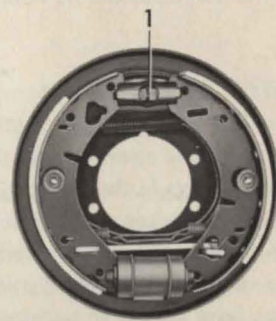
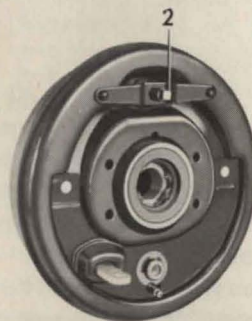
S 1062

Figure 32. Inspection hole for rear brake linings



S 1060

Figure 33. Disc brake
1. Brake disc
2. Wheel hub
3. Brake housing
4. Brake pads



S 860

Figure 34. Footbrake adjusting screws, rear wheel

1. Adjustment device
2. Adjustment point

the brake pedal and check that the wheel again rotates freely.

Should it not be possible to lock the wheel with the adjusting screw, this means that the brake linings are worn and should be exchanged without delay.

3. After adjustment, check that the brake pedal has a play of $1/8 - 1/4$ in. (3 – 6 mm) – if the play is any less, the brake shoes will not clear the drums when the pedal is released.

Handbrake adjustment

It should be possible to pull the handbrake two notches before the brakes drag. Brake lever play is adjustable by nuts 1 (Figure 35), accessible from the driver's seat. This adjustment – if needed – must not be carried out, however, until after the footbrake has been adjusted.

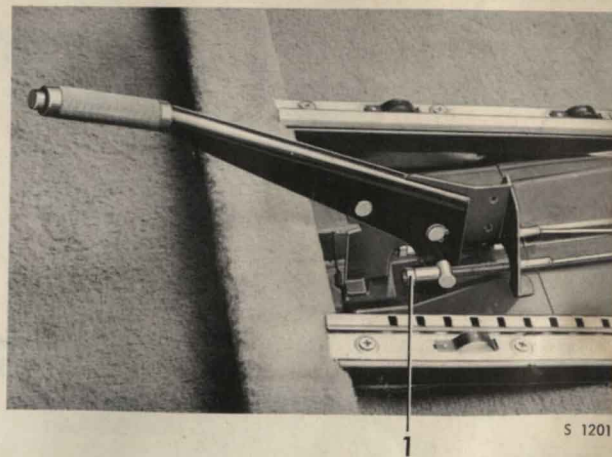


Figure 35.

Handbrake
1. Adjusting nuts

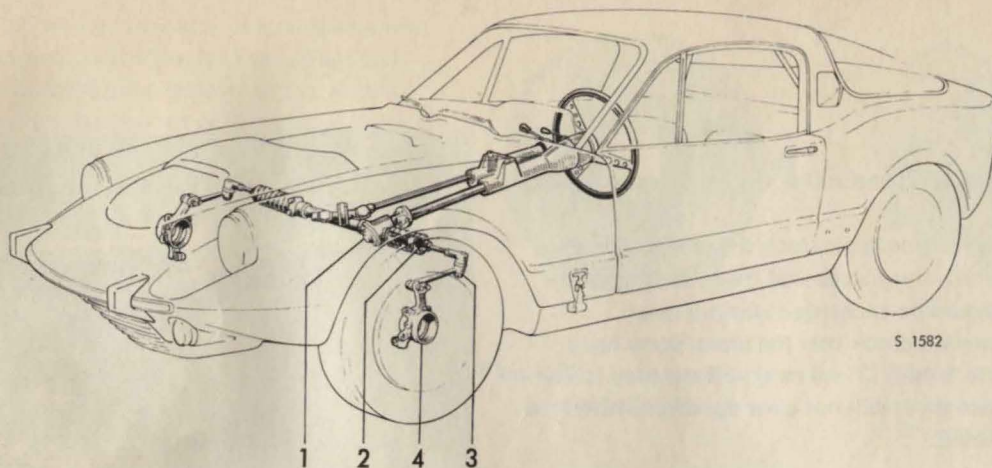


Figure 36.

Steering mechanism

- 1. Steering gear
- 2. Inner ball joint

- 3. Outer ball joint
- 4. Spindle housing with steering arm

Steering mechanism

The steering movement is transmitted from a pinion at the end of the steering column to a transverse rack, the ends of which are connected to the steering arms by adjustable drag rods of equal length. The drag rods are attached to rack and steering arms by adjustable ball joints and drag rod ends respectively. See Figure 36.

NOTE! It is of the utmost importance that the steering gear be kept correctly adjusted. To this effect the adjustment should be carried out by an authorized SAAB Dealer.

Suspension

The car is equipped with coil spring suspension at both

front and rear. Rubber bushings are used extensively to minimize road noise and reduce the number of lubrication points.

The front wheels are independently suspended and mounted in the steering spindle housing by means of wishbone spring arms. The front suspension also includes a stabilizer. The rear wheels are mounted on a transverse U-shaped axle which is suspended under the body by a central rubber bushing.

Spring arm and rear axle bushings require no special care as rubber is used throughout. If a fault in the suspension is suspected, an authorized SAAB Dealer should inspect the car.

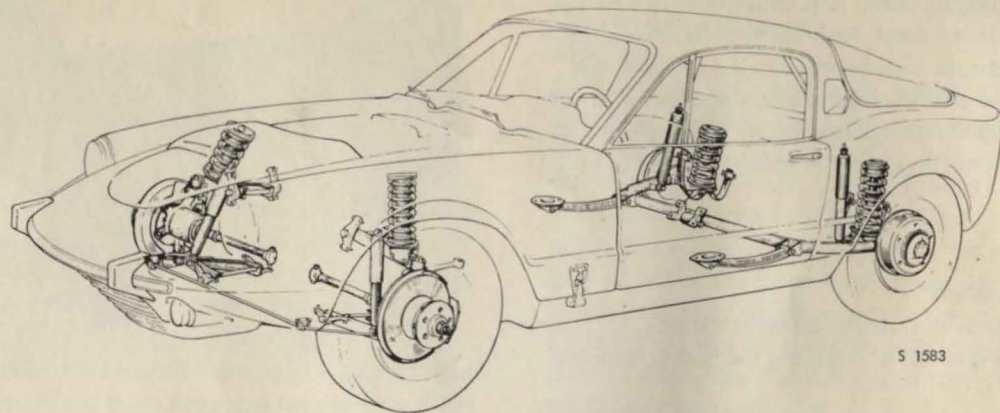


Figure 37. Axles and suspension

Shock absorbers

The Saab Sonett V4 has shock absorbers of the doubleacting hydraulic telescopic type. The front shock absorbers are mounted in rubber at their lower ends to the front lower spring arm, and the rear absorbers by pins to the sweptback end of the rear axle. The front and rear shock absorbers are of different degrees of hardness and have different stroke lengths.

Wheels and tires

Rotation of wheels and tires

The front-wheel drive causes the front tires to wear more than the rear tires. If it is desired to have the tires wear evenly, they should be changed around after a certain period of driving so that the least worn tires are at the

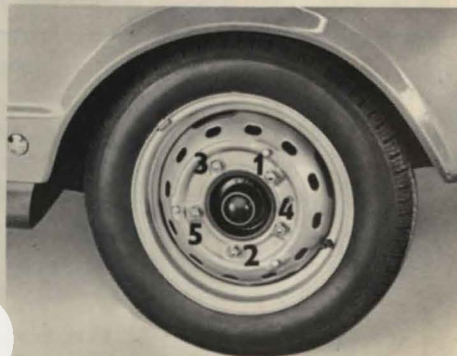


Figure 38. Tightening sequence for wheel bolts

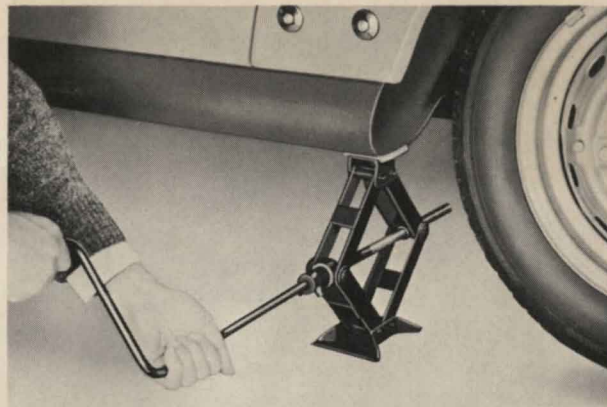
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front. When doing so, check that each tire in its new position revolves in the same direction as before: thus the left front tire should be changed with the left rear tire. By switching the tires in this manner, the working life of all four tires will remain approximately equal. Figure 38 shows the sequence in which the wheel bolts are to be tightened.

Jack and spare wheel

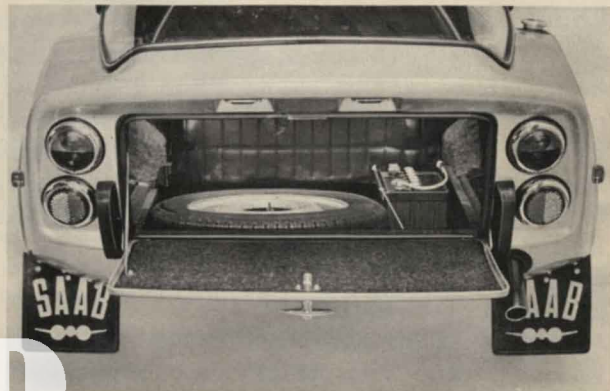
When it is necessary to lift the car with the jack, for example when changing wheel or adjusting the brakes, proceed as follows.

Position the jack at one of the supports provided at both ends of the floor beam. If one side of the car is to be jacked up, place the jack at the front support, if only the rear end should be jacked up, place the jack at the rear support. If a garage jack is used, be sure that it does not damage the underside of the body. Jacking points are provided. The front jacking point is a bent plate behind the exhaust muffler; the rear point is located on the body center line, just in front of the rear axle. Place a piece of wood on the lifting head before raising the rear end of the car. The spare wheel, tool kit and jack are kept under the floor of the trunk and the rear section of this floor can easily be lifted up.



S 1205

Figure 39. Positioning of the jack



S 1584

Figure 40. Placement of spare wheel and battery

Front wheel alignment

It is essential that the front wheels be correctly aligned. Wrong alignment impairs road holding, often making it more difficult to drive the car. Abnormal wear of the tires and steering mechanism may also occur, resulting in greater tire and repair expenses.

To avoid incorrect front wheel alignment, the car should be taken to an authorized service garage for inspection and possible adjustment every 6,000 miles (10,000 km) or whenever there is reason to believe that the alignment is faulty.

The various alignment angles are shown in Figure 41. Note that dimensions A and B are measured between the wheel rims.

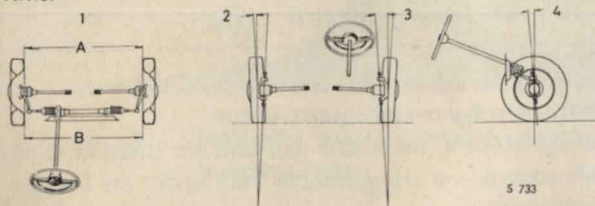


Figure 41. Front wheel alignment

- | | |
|-----------------------------|---------------------------------------|
| 1. Toe-in B - A | = 0.04 ± 0.04 in. (1 ± 1 mm) |
| 2. Camber | = $0 \pm 1/4^\circ$ |
| 3. »King-pin» inclination * | = $7 \pm 1^\circ$ |
| 4. Caster | = $2 \pm 1/2^\circ$ |

*Since the car has ball joint suspension of the wheels the term »King-pin» refers to an imaginary line through the centers of the ball joints. See Figure.

Electrical system

Alternator

The alternator is located to the right of the engine and driven by a V-belt from the engine pulley. To tighten the belt, loosen bolts 1 and 2 (Figure 42) and pull the alternator outwards. Correct tension is attained when the belt can be pressed down abt. 0.3 in. (7 mm) at a load of 3.5 lb. (1,5 kp) half way between the pulleys, see Figure 42. If the belt is too loose, it will slip and the battery discharge. Should the alternator or the voltage regulator be defective, take the car to an authorized SAAB dealer without delay. The alternator need only be greased when the car is being overhauled.

NOTE! The alternator will be damaged, if the battery terminals are removed while the engine is running. See also under »Battery».

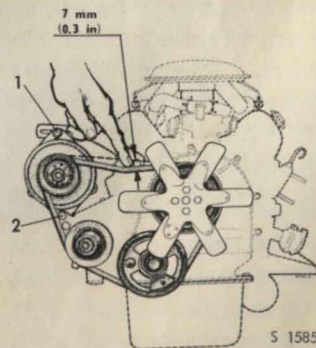


Figure 42. Adjustment of belt tension

1. Adjusting bolt

2. Set bolt

Battery

The battery is one of the most important parts of the car and should be checked and serviced carefully.

Check the electrolyte level at least once a month in winter and once every two weeks in summer. The level should be approx. 1/4 in. (6 mm) above the cell plates. Use only distilled water when filling.

The charge of the battery is measured with a hydrometer, an instrument showing the specific gravity of the electrolyte. The specific gravity values from fully charged to discharged are listed in the table below.

Vaseline should be applied liberally to terminals after that all grease and dirt has been removed in order to prevent corrosion. Be sure that the battery is firmly secured and that the terminal nuts and the ground connections are tightened.

Long and heavy discharges of the battery should be avoided because they shorten battery life considerably. In case of repeated attempts to start the engine, the battery should be allowed to recover for short periods between attempts.

Battery condition	Specific gravity
Fully charged	1.28
3/4 charged	1.24
1/2 charged	1.21
1/4 charged	1.16
Discharged	1.12

Warning!

Don't misconnect the battery. Connecting the battery to the wrong direction of current, even for a moment, means damage to the diodes of the alternator. Connect the positive cable to the positive pole of the battery, and the negative cable (ground lead) to the negative pole. In case of connecting occasionally an external battery to the battery of the car, the positive pole shall be connected to the negative pole. The battery must not be connected to or disconnected from the electrical system of the car while the engine is running. When quick-loading the battery, the positive cable of the battery shall be disconnected.

Bulb replacement

Instrument lights and control lamps

All the bulbs in the instrument unit are fitted in removable sockets and are accessible from under the instrument panel.

Other lamps

Loosen the screws and remove glass (and frame). Replace the faulty bulb and check that it is firmly positioned and makes good contact. Clean the lamps and the reflector.

Fit the glass (and frame), and be sure to obtain proper sealing against the rubber packing.

Concerning the front direction indicator lights, see Figure 43. The glass is loosened from the lamp by turning.



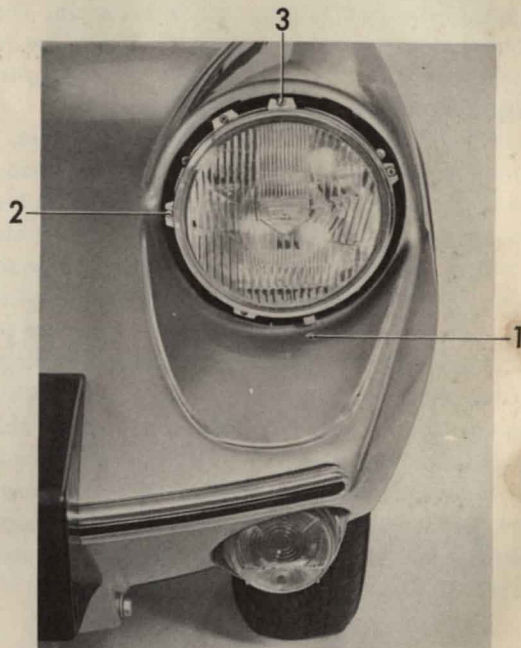
S 1208

Figure 43. Replacing bulbs for front direction indicator lights

Headlights, Sealed Beam

The unit is to be changed as follows, see Figure 44.

1. Remove the clip-provided button.
2. Insert a screwdriver in the hole from underneath and pry the chromed ring off.
3. Loosen the three attachment screws holding the retaining ring. The Sealed Beam unit can now be removed.



S 1586

Figure 44. Screw for adjusting headlights

1. Button
2. Screw for horizontal adjustment
3. Screw for vertical adjustment

CLASSICARCHIVE

Right-hand traffic, Sealed Beam

The aiming of Sealed Beam asymmetric headlights should be carried out against a target, as shown in Figure 45, or with special equipment giving equivalent results. The various lines of the target are the center line, 1, the two vertical headlight center lines 2 — 2 and the horizontal headlight center line, 3 — 3.

Measure the distance between headlight and target, 25 ft. (7,5 metres) and adjust the line 3 — 3 to be horizontal at the height of the headlight centers. Switch on the main beams and aim one at a time with the other one masked. The centers of the high intensity zones should be adjusted 2 in. (50 mm) below the intersection points of the lines 2 — 2 and the line 3 — 3. However, there are certain limits within which the beam centers should be kept. Thus they must not be to the left of or more than 6 in. (150 mm) to the right of straight ahead, neither above nor more than 4 in. (100 mm) lower than the line 3 — 3. This horizontally and vertically limited area is shown as a black field on the target in Figure 45. If the headlights are aimed according to this description, no separate adjustment will be required for the low beams.

- A = 2 in. (50 mm)
- B = 6 in. (150 mm)
- C = 16. 5/16 in. (415 mm)

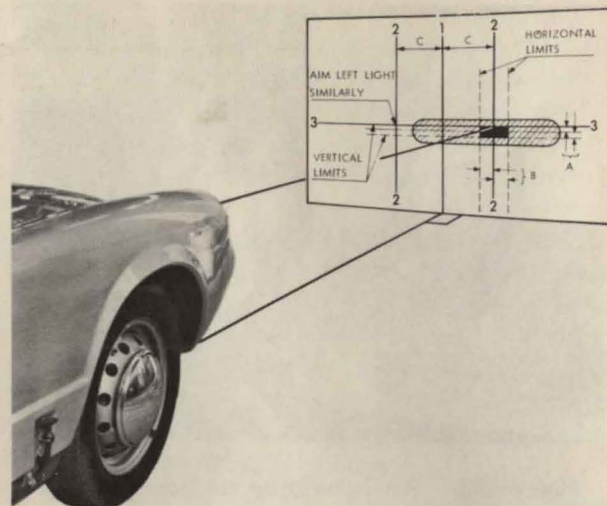


Figure 45.

Aiming Sealed Beam headlight against target

- 1. Car center line
- 2. Vertical and
- 3. Horizontal line

S 1210

Fuses

The electrical system is provided with twelve fuses. The fuses are located in a fuse box under the hood on the left-hand wheel housing and under the instrument panel. The electric units protected by each fuse are indicated inside the box lid. If a fuse is still intact after a fault has been found, this may be because of a poor contact at a cable connection. See that the connections are properly made and free of oxidation. When fitting a new fuse, be sure it makes proper contact. Should the same fuse blow frequently, the car should be taken immediately to a service garage for insulation tests of cables and equipment.

NOTE! A fuse does not protect that part of the circuit which lies between it and the power supply at damage on the isolation of the cables, the contact points, etc.



S 1587

Figure 46. Fuse box under instrument panel



S 1588

Figure 47. Fuse box in engine compartment

Wiring diagram

The range of the electrical system is shown by the wiring system on the next page. To simplify the identification, the wires have been covered with insulation of different shades, as follows:

Black	31, 85, LS.
Red	1, 6, 15, 30, 30a, 49t, 50, 54, 54i, 54n, 54r, 54s, 54t, 61, 72, 86, 87.
White	24b, 49b, 55, 56a.
Green	49, 53a, 58, 58b, 58d.
Yellow	8, 24a, 49p, 53f, 54h, 56b, 73.
Blue	49b, 56a, 56f.
Grey	14, 49a, 53b, 56, 58t.
Brown	3, 5, 13, 83, 137.

Key to numbers in Figure 48

- | | |
|---|---|
| 1. Direction indicators and side lights | 28. Indicator light fuel |
| 2. Headlights | 29. Indicator light oil pressure |
| 3. Horn | 30. Charge indicator light |
| 4. Voltage regulator | 31. Speedometer, odometer and trip meter |
| 5. Alternator | 32. Tachometer |
| 6. Ignition coil | 33. Fuel gauge |
| 7. Spark plugs | 34. Ignition and starter switch |
| 8. Distributor | 35. Map reading light with switch |
| 9. Battery | 36. Warning flasher relay |
| 10. Starter | 37. Spotlight switch |
| 11. Temperature transmitter | 38. Headlight switch and instrument illumination rheostat |
| 12. Oil pressure switch | 39. Warning flasher switch |
| 13. Windshield-washer pump | 40. Fog light switch |
| 14. Relay, signal | 41. Windshield wiper and washer switch |
| 15. Manoeuvre relay, light | 42. Heater fan switch |
| 16. Wiper motor | 43. Fuel tank gauge |
| 17. Heater fan motor | 44. Direction indicator switch with headlight flasher and dimmer switch |
| 18. Brake warning contact | 45. Horn button |
| 19. Stop lamp switch | 46. Flasher relay |
| 20. Back-up light switch | 47. Map reading light switch |
| 21. Fuse box | 48. Stop lights and direction indicator lights |
| 22. Cigarette lighter | 49. Tail lights |
| 23. Electric clock | 50. Back-up lights |
| 24. Temperature gauge | 51. Number plate light |
| 25. Direction indicator repeater light | |
| 26. Brake warning light | |
| 27. High beam indicator light | |

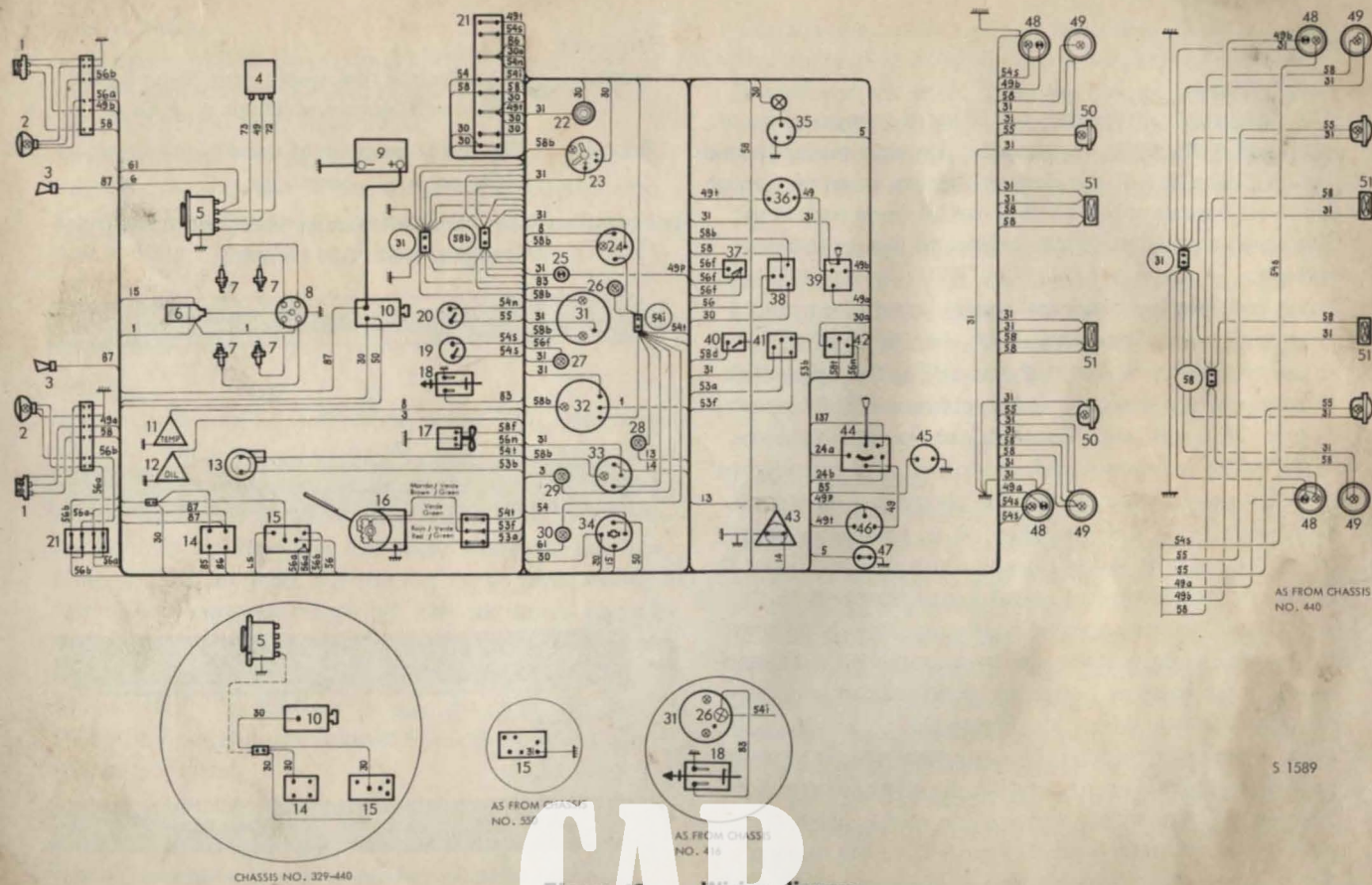


Figure 48. Wiring diagram.
Cable numbers refer to table on opposite page.

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Body

Body repairs

The body shell can be repaired either by replacement of complete parts or by mending the damaged piece, depending on the extent of the damage. As two cases of damage are never exactly alike, all that can be done here is to give some typical examples of how to deal with body damage.

When mending local damage, the damaged piece should be ground away. Preferably, both sides should be ground as per alternative A, but if this is difficult it will suffice to grind the outside only as per alternative B. The cavity is then reinforced with fiberglass matting or fiberglass cloth, which is impregnated with plastic and moulded to the right shape. After curing, the plastic can be ground, filled with putty and enamelled. In an emergency, damage can be repaired in the manner illustrated by Figure C, in which a reinforcement consisting of fiberglass cloth and plastic has been applied to the rear side. Note that the surface to be coated must be smoothened with sandpaper. Small holes or pores can be drilled out and then filled with plastic putty. See Figure D.

Large holes right through the body shell can be repaired by first trimming and chamfering the edges, whereupon a rubber or wooden mould to which release agent or plastic film has been applied is secured to the outside of the panel. After this, plastic and fiberglass cloth and/or fiberglass matting is applied to the inside.

Materials

- Plastic:** Always use a high-quality polyester-base plastic with good permanence of form.
- Putty:** The putty must be of good quality and made on a polyester base.
- Fiberglass:** Ordinary commercial fiberglass matting or fiberglass cloth can be used.

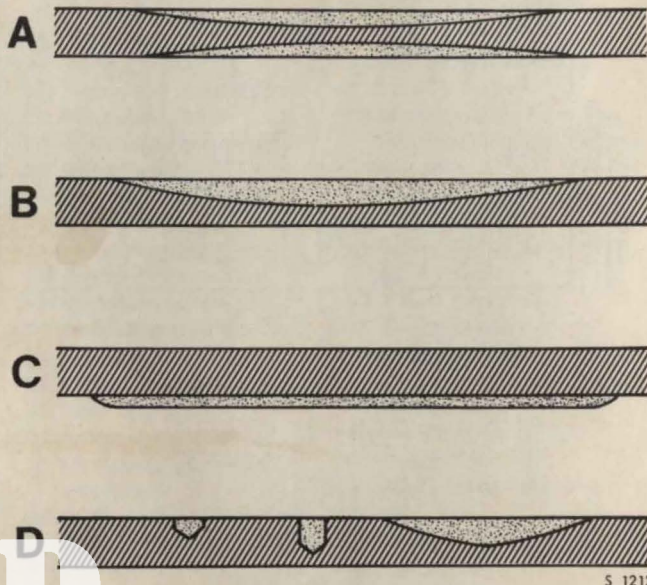


Figure 49. Typical examples of plastic body repairs

Care of finish

To preserve the finish and durability of the paintwork and the protective properties of the undercoating, the car should be suitably maintained.

Should the finish be damaged by a flying stone, for example, the spot can be cleaned and then coated with a suitable airdrying touch-up paint. Small cans containing such paint are available in all Saab colors from SAAB dealers.

Touch-up paint which dries in the air is also available in spray cans.

Washing

A new car should be washed frequently. This both hardens the paint finish and preserves the gloss. Only water should be used, as cleaners and detergents may dry out the paint. Should washing with water prove insufficient, use a cleaning fluid. In this case it is extremely important that the cleaning fluid be rinsed off thoroughly by using plenty of water and wiping with a sponge. The car should never be washed in strong sunlight. After washing, the paintwork should be carefully dried with a clean chamois leather. If allowed to dry by itself in the sun, the paint may be marked by water spots, depending on the calcium content of the water.

Polishing

In general, a synthetic paint should not be polished with rubbing compound until absolutely necessary. On no account should paint be polished before it has been allowed to age for at least 5 — 6 months. It may be

several years before paint surfaces need to be polished.

The purpose of polishing is to give paint surfaces an attractive sheen while providing enough grease to prevent cracking and drying out. Never use an abrasive polish on a new car. Before any polishing, the paintwork must, of course, be thoroughly cleaned to prevent scratching.

After polishing with rubbing compound the car should be polished with wax. The same conditions apply here, i.e. a new car may not be waxed for at least 5 — 6 months after it has been painted. After the wax has been applied (to a small area at a time), it is very important that the paint surface be well polished to remove any excessive wax.

Care of underbody

The advantages attained by underbody coating can only be enjoyed if same is continuously checked and maintained. This provides both a protection against rust and an insulation against road noises. The undersides of the fenders, which are constantly subject to being hit by flying stones and the like, must be looked after with special care. Should the underbody coating be torn or loosened, the underbody should be thoroughly cleaned, and be dry, before a new coating is applied. Cleaning is best done with a scraper and wire brush, after which the underbody should be cleaned with, for example, gasoline.

When applying a new coating, do not use too much or it may run and even fall off completely after drying.

Rust-preventing treatment

The Saab cars are underbody coated before leaving the factory.

Still, there is a risk of corrosion due to alkaline and similar solutions sprayed on gravel roads. Therefore, we recommend the underside be inspected once a year. This recommendation deserves attention especially from car owners living in districts where the risk of such corrosion is high.

If necessary the car should be treated with a reliable antirust agent by an authorized garage.

Chromium-plated parts

The alkaline solution sprayed on gravel roads can spoil the chrome-plated surfaces. The best way to prevent corrosion of these parts is to wash them frequently and thoroughly with soap and water or a neutral cleaner, such as gasoline. When the surfaces have been washed and dried, it is advisable to apply a wax of the same type as that used for the finish.

Never use rubbing compound on chrome-plated parts

If the chrome has been scratched down to the metal, any rust in the scratch may be removed by applying phosphoric acid in a solution of one part acid to two parts of water. The scratch should then be thoroughly washed with clean water and wiped dry. Further corrosion may be prevented by coating the damaged area with clear cellulose varnish or wax.

The glass surfaces should preferably be cleaned with a chamois leather or a linen rag moistened in water.

Care of upholstery

The upholstery in the car consists of plastic coated fabric and plastic foil, and of cloth for the headlining. The plastic upholstery does not let through any dirt, repels dust and is resistant to oil and gasoline. If soiled, plastic surfaces may be easily cleaned with lukewarm water and a synthetic detergent. A semistiff brush may be used. If badly stained by oil or the like, it can be cleaned with white spirit, trichlorethylene, etc. These organic solvents, however, should not be used too often, because they tend to stiffen the plastic.

The cloth may be effectively cleaned with a cloth moistened in soap solution or other suitable stain remover. Use lukewarm water,

Don't use organic solvents for headlining.

Engine compartment

The engine compartment should be cleaned with a rag or brush dipped in kerosene and then hosed with warm water. If high-pressure hoses are used, particular care should be taken to see that no water or kerosene is sprayed direct on the distributor, alternator, starter motor or voltage regulator, nor on the inspection lid of the clutch cover.

Trouble Shooting

The following directions and advice are intended to help to locate and remedy minor faults which may occur when motoring.

1. The engine does not start, although it is cranked by the starter at normal speed

In order that the engine shall start quickly it is important to follow the starting instructions.

- a. Check that the tank contains sufficient fuel and that the charge indicator lamp lights up when the ignition is switched on.
- b. Check that the throttle is in the idling position, i.e. that the throttle stop screw strikes the stop on the carburetor.
- c. In cold and damp weather, clean the spark plug insulators and wipe them dry if grounding is suspected.
- d. Check the fuel line connections to the pump and the carburetor for leaks.
By loosening the fuel hose fitting at the carburetor, check that the fuel pump is feeding fuel, and let the starter motor rotate the engine a few turns.
Accelerator pedal in idling position.
- e. If the engine has been cranked for some time without starting, too much fuel may have entered the cylinders and soaked the spark plugs. Remove the spark plugs and dry out the cylinders by cranking

the engine with the starter.

Dry the spark plugs and check that the electrode gap is correct. Fit new plugs if available.

- f. If the engine is cold, check that the choke flap is closed.

The air filter must be removed at this checking.

2. Should the engine still fail to start, check whether spark appears at the spark plugs

- a. Remove the ignition cable from one spark plug at a time and rotate the starter with the ignition switched on. A powerful spark should now jump the gap between cable and cable connection of the spark plug.
- b. If there is no spark or only a faint one, check that the ignition cables are properly inserted in the distributor and ignition coil. Remove the cables and clean their terminals.
- c. Take off the distributor cap and wipe it dry. Check that the cap is not cracked. Inspect and clean all connections.

3. Sparks appear, but the engine fails to start, although fuel is properly fed to the carburetor

Check that the carburetor jets and ducts are not clogged. Clean the carburetor if required. See Figure 27.

4. Should the engine misfire, the cause may be:

- a. An ignition cable has become loose and there is

short-circuit with the metal.

- b. A spark plug is fouled. Clean and adjust gap.
- c. The distributor cap is cracked or moist.

5. Engine loses power. Check that:

- a. Ignition cables are properly connected.
- b. Spark plugs are clean and correctly gapped.
- c. No carburetor jet or duct is clogged.
- d. Accelerator is not jammed, thereby obstructing movements of throttle valve.
- e. Grounding has not occurred in the ignition system.
- f. Carburetor icing has not occurred (if weather is cold and damp).

6. Ignition is switched on, but charge indicator does not light. The cause may be:

- a. The battery is run down or a battery cable is loose.
- b. The fuse for the indicator lamp is blown.
- c. A cable has poor contact at the ignition switch or at the ammeter.
- d. Indicator light bulb is burnt out.

7. No sparks at the spark plugs, although the ignition is switched on and the charge indicator lamp lights up. The cause may be:

- a. Poor connections between cables and distributor/ignition coil.
- b. Ignition cable is damaged, causing a short-circuit with the metal.
- c. Moisture in distributor

- d. Crack in the distributor cap or distributor arm.
- e. Defective ignition coil.

Grounding which occurs in the bakelite cap of the distributor or ignition coil can be temporarily remedied by cleaning and scraping the crack with a knife or similar instrument.

8. Charge indicator lamp lights while driving

- a. Alternator V-belt is broken or too slack.
- b. Voltage regulator defective.
- c. Alternator defective.

9. Starter runs very slowly

- a. Ground connections/cable connections at battery terminals or at starter are corroded or not sufficiently tightened.
- b. Battery run down.
- c. The carbon brushes in the starter may be jammed, worn, or dirty.

10. Battery run down. The cause may be:

- a. Alternator V-belt slipping.
- b. Electrolyte level too low.
- c. Voltage regulator or Alternator defective.
- d. A cable is poorly insulated.
- e. A current-consuming unit fails to switch off.

CLASSIC CAR ARCHIVE

Motoring Abroad

In certain areas Saab owners may not find adequate servicing facilities at garages and service stations familiar with the Saab. The manufacturer is aware of this difficulty and has established spare parts warehouses in such areas. If the owner plans to drive in an area where SAAB servicing is limited, he may profit from the following advice.

Before departure

1. Remember to take this Owner's Manual and the Service Book with you.
2. Make sure the tool kit is complete.
3. The equipment should include: a complete set of engine gaskets; fan belt; breaker points; distributor cap; a box of fuses and a set of spark plugs.
4. Include a list of authorized SAAB Dealers for the area to be visited. This may be obtained from your SAAB dealer or motoring organization.

During the trip

1. Before going abroad to a country where the opposite rule of the road is in force, check that the headlights be altered.

2. Be sure to use premium fuel.
3. Remember that free- and highways often tempt the driver to high speeds and that road resistance is small. Use the Free Wheel Drive and let the car roll with the engine idling, i.e. with the accelerator completely released. When correctly applied, this driving technique will not reduce speed appreciably but will spare the engine and reduce fuel consumption.
4. When driving in mountainous terrain with long downhill slopes, the car should be driven with the Free Wheel Drive locked to make full use of the braking power of the engine.
5. Do not neglect regular care and lubrication of the car. Follow the recommendations in the Lubrication Chart.
6. Should the carburetor or the electrical system (alternator, starter, distributor, etc.) fail to function properly, consult the respective manufacturers (Solex, Bosch, etc.).

Towing

In case of towing, it is convenient to place a towline (approx. 1/2") around the pivots for the hood (between the grill and the hood).

Technical Data

General

Body	two-seats, GT-type
Overall length with bumpers	12 ft. 4 in. (3,770 mm)
Overall width	4 ft. 11 in. (1,550 mm)
Overall height, with driver ...	3 ft. 10 in. (1,160 mm)
Road clearance at curb weight	approx. 5 in. (125 mm)
Track, front and rear	4 ft. 2.5 in. (1,232 mm)
Wheelbase	7 ft. 1 in. (2,149 mm)
Turning circle diameter	31 ft. 6 in. (9.6 meters)
Curb weight incl. fuel, water, tools and sparewheel	1,700 lbs. (775 kg)
Weight distribution	
Fully loaded, front	56%
Hill-climbing performance at curb weight incl. driver:	
2nd gear	39%
3rd gear	21%
4th gear	12%

Engine

Type	4-stroke 4-cylinders
Power	
DIN at 4,700 r.p.m.	65 bhp
Max. torque at 2,500 r.p.m. (DIN)	85 ft.-lb. (11.7 kpm)
Cylinder volume	91.4 cu. in. (1,498 cc)
Bore	3.54 in. (90 mm)
Stroke	2.32 in. (58.86 mm)

Placement of cylinders:

Right hand side	1-2
Left hand side	3-4
Firing order	1-3-4-2
(Cylinder 1 right, front)	

Valve clearance, warm engine:

Inlet	0.016 in. (0.40 mm)
Exhaust	0.016 in. (0.40 mm)
Compression ratio nominal	9.0:1
Lubrication	pressure lubrication
Oil capacity	3 US quarts (3 litres)
Oil capacity incl. oil filter	3.3 US quarts (3.3 litres)
(The engine number is die-stamped on the upper left surface under the cooling water hose connection to the thermostat.)	

Fuel system

Fuel tank capacity	approx. 15.8 US gals. (60 litres)
Fuel pump	Pierburg FO4-666
Carburetor	Solex 32 PDSIT-4

Cooling system

Capacity, incl. heater	approx. 1.9 US gals. (7.2 litres)
Thermostat, opens at	approx. 181°F (83°C)

Transmission

Oil EP oil SAE 80
Oil capacity, gearbox/
differential approx. 1.8 US quarts (1.7 litres)

Clutch type, single dry plate with spring hub
Plate, outer diameter 7.5 in. (190 mm)

Gear ratio, total:

1st gear	16.23:1
2nd gear	9.74:1
3rd gear	6.05:1
4th gear	3.9:1
Reverse	14.8:1

Differential gear ratio, pinion/ring gear 4.67:1

Road speed at 1,000 r.p.m. engine speed, calculated running radius 11.8 in. (300 mm):

1st gear	7.0 km/h	4.3 m.p.h.
2nd gear	11.7 km/h	7.3 m.p.h.
3rd gear	19.0 km/h	11.9 m.p.h.
4th gear	29.0 km/h	18.1 m.p.h.
Reverse	7.6 km/h	4.7 m.p.h.

Suspension

Maximum spring movement

Front wheels	5.5 in. (139 mm)
Rear wheels	5.9 in. (150 mm)

Shock absorbers

Type hydraulic-telescopic
Maximum stroke, when mounted
Front wheels 3.2 in. (82 mm)
Rear wheels 4.4 in. (106 mm)

Brake system

Make Lockheed
Footbrake Hydraulic, acts
on 4 wheels.
Type: two-circuit,
diagonal
Handbrake Mechanical,
rear wheels

Front: disc brake:
disc diameter 10 1/2" (267 mm)
Friction surface 180 sq. in. (1160 cm²)
Rear: brake drum:
Dimension 8" x 1 1/2"
Friction surface 76 sq. in. (490 cm²)
Total friction surface (front
and rear) 256 sq. in. (1650 cm²)

Steering mechanism

Steering gear ratio	
steering wheel/road wheels	average 14:1
Number of turns, lock to lock	2 1/4

Wheels and tires

Rim type	"wide base" disk wheels
Rim dimensions	4.5J x 15"
Bolts per wheel	5
Tires: Sports car tires, dimensions	155 x 15"

Tire pressure 155 x 15"

Front	Rear
25 lbs/sq. in. (1.8 kp/cm ²)	22 lbs/sq. in. (1.6 kp/cm ²)

Front Wheel Alignment

Toe-in, measured on rim	0.04 in. ± 0.04 (1 ± 1 mm)
Camber	0 $\pm 1/4^{\circ}$
Caster	2 $\pm 1/2^{\circ}$
"King pin" inclination	7 $\pm 1^{\circ}$

Electrical system

Voltage	12 V
Battery capacity	44 amp/h
Starter	0.8 HP
Alternator, max. charge	35 A
Spark plugs:	
Thread	M14 x 1.25
Heat range:	
Auto-Lite AE 22	
Bosch W225 T35	
Champion L 82 Y	
Champion L 87 Y	
NGK B-7 H	
Electrode gap	0.024-0.028 in. (0.6-0.7 mm)
Breaker point gap, distributor	0.016 in. (0.4 mm)
Firing sequence	1-3-4-2
Ignition setting:	
Basic setting with stroboscope at 1000 r.p.m. with disconnected vacuum hose	10 ⁰ B.T.D.C.

Bulbs	Watts	SAAB No.	Phillips No.
2 Headlights, Sealed Beam (USA)		712910	
2 Parking lights front	6	784982	12819
2 Flasher front	25	715471	1073
2 Flasher and stop lights rear	25	715471	1073
2 Tail light	5	715472	12821
2 Number plate light	5	708419	12844
2 Back-up light	32 cp	709683	1034
1 Lighting, clock	4	715730	12929
1 Lighting, tachometer	2	715489	12913
11 Instrument and control lights	2	708434	12829
1 Map reading light	5	708419	12844
12 Fuses (25 mm)	8A		

Tools

Jack and crank in bag
 Tool bag containing:
 Spark plug wrench, and wheel bolt wrench with pin
 Adjustable wrench
 Fixed wrenches, two
 Combination pliers
 Screwdriver
 Cross recess screwdriver
 Square key for transmission plugs
 Brake adjustment wrench, rear wheel

Use only genuine SAAB parts

If possible use exchange/replacement units such as brake shoes, main cylinder for brake system, fan unit for heating system.

The usage of exchange/replacement units is time saving and the prices so low that more extensive repair and renovating work is not profitable.

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Enbart för spridning utomlands

CLASSIC CAR ARCHIVE

***Owner's Manuals, Service Manuals
Vintage Ads and more...***



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